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LANDSCAPE MANAGEMENT

INCORPORATING LAWN CARE INDUSTRY

DIAGNOSING TURFGRASS PROBLEMS

Mower care: pre-storage tips

Calculating mowing costs

Spring annuals spice up colo

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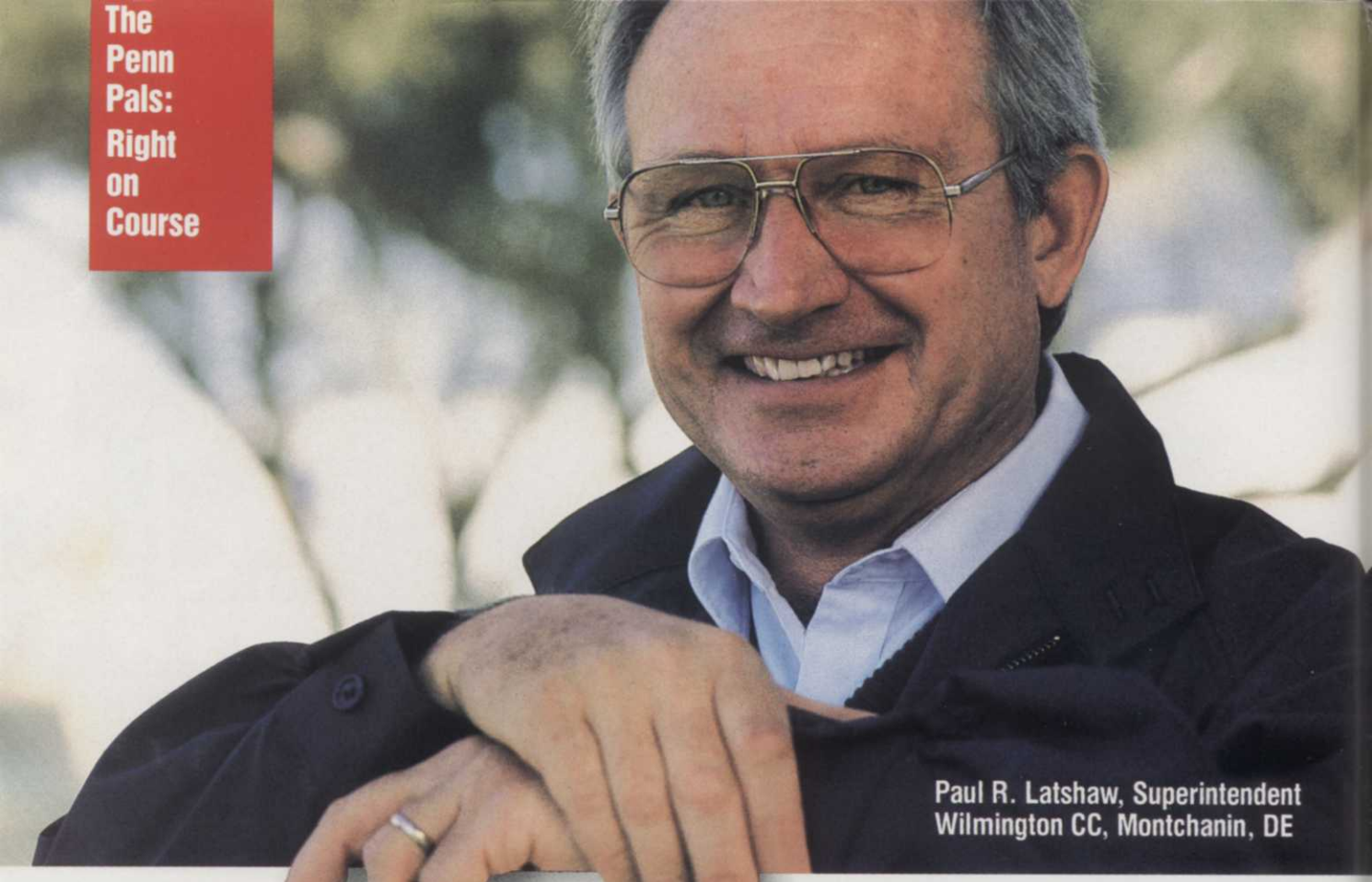
BEARD

The Penn Pals: Right on Course



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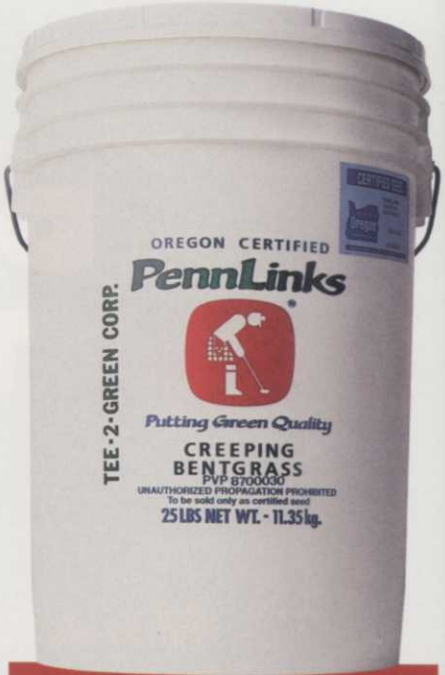
"PennLinks. Spread the word."

Paul Latshaw



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AS WE SEE IT

JERRY ROCHE, EDITOR-IN-CHIEF

Sales: so detestable a function of our jobs?

Our company's version of Willy Loman was a crusty old coot (long since retired) who never once attended a sales seminar, for two reasons:

1) he believed there was nothing those high-priced consultants could tell him that he didn't already know; and

2) seminars tended to take away time that was usually—and better—spent with customers.

When you walked into his office, the first thing you had to see was a large sign that hung behind his desk. It read:

"Sales is not the entire company, but everybody in the company had better be in sales."

Or something to that effect.

At the time, it was considered trite. But now it's a sign of the times.

Salesmanship is a function of every person in your organization, from the very top to the very newest line-level hiree. The current economy dictates it—whether you like it or not.

Salesmanship extends beyond the scheduled encounter between your senior sales representative and a potential customer. Most times, in fact, the "hard sell" might get the customer—but it's the "soft sell" that keeps the customer.

- It's the seasonal employee mowing a lawn or golf hole who goes out of his or her way to smile and tell the customer or golfer to "Have a nice day."
- It's the company president or golf course superintendent who makes an unscheduled stop at the customer's or greens chairman's home. Just to ask, "How can we do our job better?" or say "Thanks for your business."
- It's the secretary who sends out the Christmas cards and writes a personal note on each and every one.
- It's the customer service manager who doesn't get rattled when someone calls with a complaint, but instead gets to the root of the problem and immediately solves it to the customer's satisfaction.

Every day of the year, thousands of sales consultants give thousands of companies thousands of seminars. But what it always comes down to is this:

The customer is No.1. Keep him or her happy, you keep your job, you keep your profits.

This, of course, is not always an easy thing to do. Especially for many of us who would rather just crank up the mower and walk lawns, enjoying the fresh air all day.

But the sooner we realize that positive personal contact—with people who count—is the key to doing our jobs better, the sooner we'll be more secure in our positions and more profitable to boot.

We have to remember this all the time, especially when we're hiring new personnel.

The tendency is to hire the applicant who may not be acquainted with all the latest personal hygiene techniques, but who can mow 15 acres a day. The kind of person who gets on the grass, mows the hell out of it, and gets on to the next job. We tend to overlook the more presentable, outgoing people who can only mow, say, eight or nine acres a day.

But the latter person—the kind of person who will take a few minutes to just say hello or ask the customer how the property looks—is one who will ultimately be the savior of your business or your department.

It's not an easy thing, selling your services in this economy. But having everyone on staff helping you sure makes the job easier!

Jerry Roche

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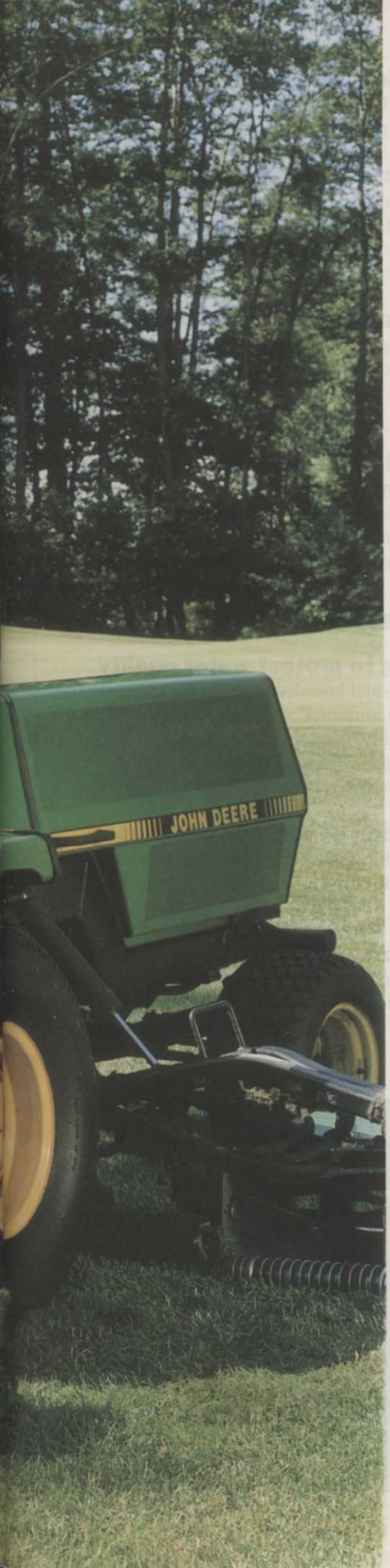

This decision has them smiling at Semiahmoo

Quality maintenance is critical to the success of any golf course. That's why the owners of the Palmer-designed Semiahmoo golf course in Blaine, Washington, decided to go from contract maintenence to an in-house operation this year. Gordon Kiyokawa was their choice for superintendent. His choice of equipment was John Deere.

"I worked at PGA West, Carmel Valley Ranch and Hood River before this, so I knew what it would take to put together a top-notch maintenance operation," says Kiyokawa. "One of my first jobs was purchasing the kind of equipment we'd need to get that job done. I went with John Deere because I had seen how it performed at some of these other courses.

The 3325 Professional Turf Mower is one of 14 pieces of John Deere equipment that help Gordon Kiyokawa deliver top-notch conditions for players at the Palmer-designed Semiahmoo golf course in Blaine, Washington.

"We now have 14 pieces of John Deere equipment including two 1200 Bunker Rakes, one 3325 Turf Mower, two 2243 Triplex Greens Mowers and five AMT® 626 utility vehicles.

"Traction advantages were one of the reasons we went with the 3325. It rains 40-45 inches a year here, yet with the weight transfer and differential lock on the 3325, there hasn't been a day when it was too wet for it to work.

"Service support was also a big factor in my decision to go with John Deere. It's nice to know when you purchase something that you won't have to worry about it."

For the name of your distributor or free literature on John Deere Golf and Turf Equipment, call 1-800-544-2122 or write John Deere, Dept. 956, Moline, IL 61265.

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LANDSCAPE MANAGEMENT
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VBPA ABP

ASK THE EXPERT

DR. BALAKRISHNA RAO

Eliminating weeds in walkways

Problem: What can be used to manage weeds in cracks of driveways and sidewalks? *(Ohio)*

Solution: To manage existing weeds, a non-selective herbicide like Roundup is needed. To manage the future weeds from seeds, a pre-emergence herbicide like Surflan is needed. Therefore, if the weeds are already present, use a combination of Surflan plus Roundup. Avoid spraying or contacting any of the non-target, desirable plants, because Roundup can affect any plants it contacts.

Many weed seeds can remain viable in soil for 10-20 years; therefore, repeat applications may be needed after the residual effect of the pre-emergence herbicide is gone.

Read and follow label specifications for better results.

Soil test needed on new sod farm?

Problem: I am starting a sod farm. I've been told I don't need to test my soil; just use fertilizer containing trace minerals, etc. What do you think? *(New York)*

Solution: The best time to apply pH-correcting materials and immobile fertilizers such as phosphorus is before establishment. Only a soil test can determine the proper amount to apply for your soil conditions.

Pine bark beetles out in force

Problem: We are experiencing a pine bark beetle problem. We feel it is the Ips beetle. From our literature, we were unable to find any recommendations to manage these insects. Is there anything we can do to protect the healthy trees? *(New York)*

Solution: We have been getting many calls regarding pine bark beetle problems this year compared to past years. This is believed to be due to the exposure of these plants to moisture stress during the 1988 drought and again this year. These weakened trees are susceptible to beetle attack.

Ips beetle is one of the major insect problems reported from many parts of the northeastern states. To provide proper management, make sure that you are dealing with Ips beetle. Contact your local cooperative extension service to help identify the pest.

Ohio State University publications suggest the use of insecticides such as Dursban 4E (2 gal./100), or Dursban 50WP (16.5 lb./100 gal.); Lindane (20 percent liquid 3 gal./100 gal.) or Sevin SL (4 gal/100). They suggest treating the trunk surfaces when adults are active.

Engraver beetles (Ips beetles) may require several seasonal treatments. Healthy trees are usually not attacked. Spray trunks one to four times at one month intervals beginning in mid-May. In the North, Ips beetle has more than one generation, therefore at least two treatments should be made—one in late May and again in late July.

Since there are no treatments found in Cornell University publications, check with your cooperative extension service personnel.

Infested trees should be promptly removed. Bury, de-bark or burn cut logs to prevent further spread of these insects. Provide proper watering, fertilizing, mulching and pest management as needed to help improve plant health.

Read and follow label specifications for better results.

Treating for millipedes

Problem: How do I eliminate millipedes around homes? *(Michigan)*

Solution: Millipedes are generally a nuisance pest. They are normally found outdoors in damp places under leaves and mulch. But sometimes they invade homes, particularly ground floors. Unlike centipedes, millipedes have round bodies and two pairs of legs for almost each body segment.

Since millipedes take their shelter under debris near home foundations, sanitizing by maintaining clean surroundings and/or hand picking is one way to manage them. If the population is too high for mechanical methods, apply insecticides such as malathion, Dursban or Sevin.

Read and follow label specifications for better results.

Managing Euonymus scale.

Problem: What is the best way to manage scales on Euonymus? The plant is severely covered with scales and leaves are showing yellowish discoloration. Are they worth keeping? (Ohio)

Solution: To manage Euonymus scales, use 2 percent Superior horticultural oil as a dormant treatment in the spring.

When the crawlers are emerging, usually around late May through mid-June, use insecticides such as malathion, Orthene, Dursban or Sevin and repeat two more times at 10-day intervals.

If the scale activity continues, repeat treatments as needed.

Balakrishna Rao is Manager of Technical Resources for the Davey Tree Co., Kent, Ohio.

Questions should be mailed to ASK THE EXPERT, LANDSCAPE MANAGEMENT, 7500 Old Oak Boulevard, Cleveland, OH 44130. Please allow 2 to 3 months for an answer to appear in the magazine.

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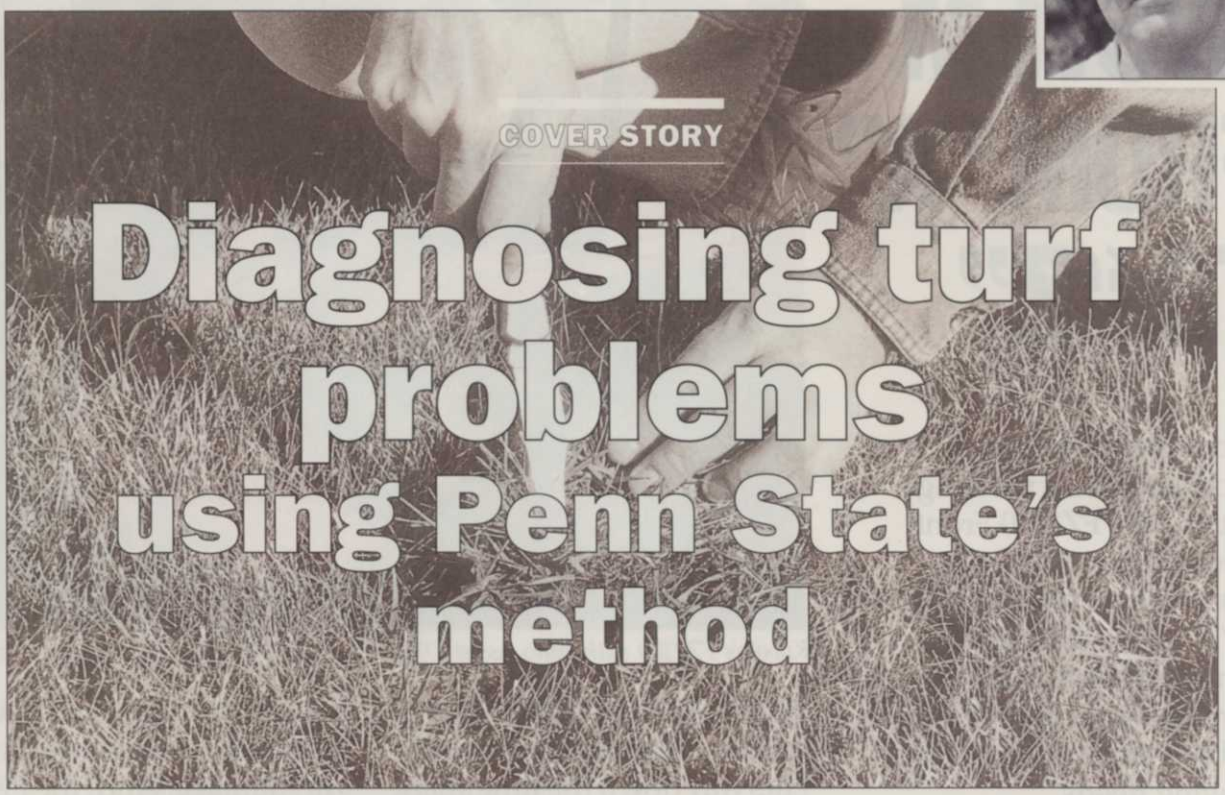
LANDSCAPE MANAGEMENT

Dr. Harper: Turf problems may have 'roots' in the past



COVER STORY

Diagnosing turf problems using Penn State's method

Facts and observations must be correlated to determine the causes of most turf problems.

■ Some turf problems have their "roots" in maintenance practices of previous years, making their diagnosis difficult, says Dr. John Harper II, professor emeritus at Penn State University.

"Seldom does the homeowner or the poorly informed part-time turfgrass superintendent recognize that there is a problem until considerable damage has occurred," says Harper. "It is virtually impossible to accurately diagnose the initial cause of some problems because the damage occurred so long ago that there is no identifiable symptom or causal agent present."

Dr. Harper says that, for correct diagnosis of turfgrass problems, a sturdy pocket knife, a good quality hand lens and a soil probe are *de rigeur*. Optional—yet valuable—tools are a portable pH meter, a portable microscope and a vial of pyrethrum to use as an insect irritant.

Turfgrass personnel at Penn State have devised their own checklist to help diagnose problems. Here is what they recommend:

1) Observe site conditions. Check the exposure and severity of slopes, the location of sidewalks, driveways and patios, drainage patterns, traffic distribution and locations of buildings and other structures.

Note the location, size and types of trees, how much shadow they cast, and their rooting pattern. Check prevailing winds, orientation of buildings in relation to the sun, and play areas.

2) Observe community symptoms. Note overall color of turf, any mottled appearance, patterns of dead or damaged turf, presence of weeds, conditions of adjoining turf areas, and general vigor and density of overall growth.

3) Determine the species and—if possible—varieties of grasses. Remember these levels of susceptibility:

- Some Kentucky bluegrasses are very susceptible to take-all diseases and/or stripe smut.
- Kentucky bluegrass and fine fescue varieties vary in leafspot susceptibility.
- Kentucky bluegrass (except Glade and Bensun) also has poor shade tolerance, and is powdery mildew-susceptible in the shade.
- Turf-type ryegrasses are very susceptible to brown patch and pythium.
- Fine fescues are very susceptible to red thread.
- Kentucky bluegrass varieties vary in chinch bug resistance.
- Tall fescue is highly resistant to chinch bugs.
- Grass species vary in drought resistance.
- Some Kentucky bluegrass varieties are highly rust-susceptible.

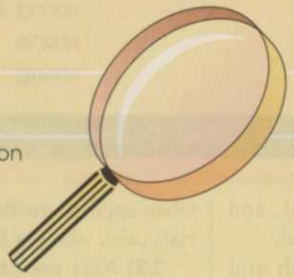
4) Evaluate vigor, density, amount and type of cover. Note whether growth is sparse or dense, the color, presence of chlorosis. Note types of weeds present and whether they are acid-loving plants.

5) Examine overall pattern of damage. (See chart.)

6) How did damage appear to spread? (See chart.) Note if it's most prominent on well-drained or poorly-drained areas, or

DIAGNOSING TURF PROBLEMS

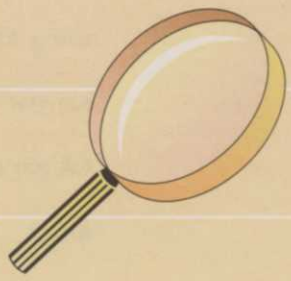
Symptom or conditions	Possible diagnosis	Prime season
Pattern of damage		
circular	disease	growing season
ring with undamaged grass on both sides	fairy ring	growing season
damage spread equally in all directions	fairy ring	growing season
straight lines or skips	over-application	growing season
	toxic material	growing season
follows drainage pattern	disease, especially pythium	summer
haphazard spread	sod webworm	growing season
Plant leaves		
white bands with brown margins	dollar spot	growing season
coral red strands at leaf tips	red thread	spring
pink cotton candy-appearing mycelium	pink patch	spring
red pustules full of spores	rust	summer
curled midvein covered with black spores	stripe smut	spring
irregular circular areas, purplish-black smoke ring at margins	brown patch	summer
acervuli with spines on leaves	anthracnose	summer
small white speckles on leaves	ozone or air pollutant	growing season
frog-eye appearance (dead circles with green centers)	necrotic ring spot or summer patch	summer
purple-red, straw-colored spots with brown margins	leafspot	spring, fall
purple-red, straw-colored spots with brown margins	crown and root rot	summer
circular patches of bleached matted grass with pink cast	pink snow mold	fall, spring
circular patches of bleached matted grass and black sclerotia	gray snow mold	spring
blue-green small circular patches of wilted grass	take-all disease	growing season
large silvery-tan bleached areas as snow melts	winter grain mite	early spring
surface runways, leaves chewed off as snow melts	field mice, voles	early spring
individual tufts of yellow grass	weevils	spring
yellow or dead leaves under trees	greenbugs	summer
powdery substance on Kentucky bluegrass, especially in shade	powdery mildew	growing season
chewing damage	bluegrass billbugs	spring, summer
	sod webworms	growing season
	hyperodes weevil	spring
sucking damage	chinch bugs	spring, summer
	greenbugs	growing season
burn or dehydration	fertilizer damage	growing season
	pesticide damage	growing season
	high temperature scald	summer
	wet or dry wilt	growing season
	dog damage	growing season
	gasoline spill	growing season
water-soaked or greasy appearance	disease, especially pythium	summer
	oil spill	growing season
torn or shredded tips	dull mower	growing season



Source: Dr. John Harper II, Penn State University

DIAGNOSING TURF PROBLEMS

Symptom or conditions	Possible diagnosis	Prime season
Plant roots		
dark, discolored	water problem	growing season
	physiological problem	growing season
severed	white grubs	spring, late summer
Soil and thatch		
bird holes	insects, especially cutworms, sod webworms, armyworms	growing season
sod torn up	skunks, racoons, bears	spring, summer, late fall
	vandalism	anytime
mounds of soil	ants or moles	growing season
excessive thatch	wetting and drying problems	growing season
	poor air exchange	growing season
	poor root development	growing season
	abnormal growth habit	growing season
	reduced chemical efficacy	growing season
	insecticide binding	growing season
Weather conditions		
cold, wet	snow molds	early spring
	leaf spot	spring, fall
	red thread	spring
	low-temp. pythiums	spring
	low-temp. brown patch	early spring
	dollar spot	growing season
hot, dry	chinch bugs	spring, late summer
	white grubs	spring, late summer
	dry wilt	growing season
	take-all diseases	growing season
hot, wet	brown patch	summer
	pythium	summer
	slime molds	late summer
	wet wilt	growing season
	scald	growing season
	sod webworms	growing season
cool, moist shaded areas	greenbugs	growing season
Unmowed areas		
presence of lawn moths	sod webworm	growing season
Japanese beetles	grub damage	spring, late summer
chafers	grub damage	spring, late summer
black turfgrass weevils	grub damage	spring, early summer
Hyperodes weevil	grub damage	spring
June beetles	grub damage	spring



Source: Dr. John Harper II, Penn State University

where thatch is heavy or minimal, or whether it appears to follow mower or foot traffic patterns.

7) Examine plant leaves. (See chart.) Note lesions, fruiting structures, symptom appearance.

8) Examine plant roots. (See chart.) In particular, note their color and health level.

9) Check soil and thatch. (See chart.)

10) Check mowing program. Determine height of cut, frequency of cut, sharpness and adjustment of equipment, and whether a rotary or reel mower is used.

11) Check soil. Measure depth and determine type. Also note drainage, compaction or presence of buried materials.

12) Question materials application. Determine the fertilizer analysis, type of nitrogen, pre- or post-emergence herbicides, insecticides, fungicides, combinations and "miracle" products.

Note rates of application, conditions when applied, method of application, materials used, whether they are watered in, etc.

13) Note presence of insects on ornamentals or in unmowed areas. (See chart.)

14) Note whether soil test has been made in past three years.

"The final step, of course, is to correlate all known facts, observations and weather conditions, and make the judgment of causes of damage and corrective measures to be taken," Dr. Harper concludes.

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* Refer to label for stage of growth and species controlled. DMP-2-557D

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LM REPORTS

Blower's future as landscape tool lies in hands of 'polite' operators

■ The worth of any power blower lies in how much and how well it moves things—leaves, clippings, water, litter, debris, etc.

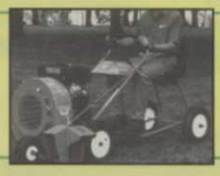
Increasingly, homeowners and green industry professionals alike find new uses for these portable blowers. In 1980 about 50,000 gasoline-powered blowers were sold. Last year, about 700,000.

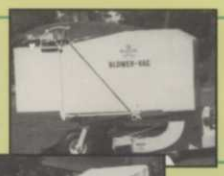
Two of the first questions most prospective buyers ask of a particular unit is: (1) How powerful is the blower? and (2) How much can it move and how fast?

Then they might ask about weight and operator comfort (particularly with a back-

WALK-BEHIND COMMERCIAL BLOWERS

Company	Model/Wt.	Displacement/ power	Features
Atwater Strong PO Box 1108, Akron, OH 44309 216-630-9822	8-K Lo-Blo Air Broom	16 hp	Kohler Deluxe K-181-T cast iron engine, recoil start, satellite exhaust valve, 225 mph, 741 cfm.
Ber-Vac 2835 chemin de l'aeroport, Thetford Mines, Quebec, Canada, G6G 5R7 418-338-6153	Debris Blower	PTO-driven	400 lbs., 35 inches wide, 35 inches high, 40 inches long, quick attach coupler at both ends, ratates in 220-degree arc, controlled from tractor seat, easy installation.
Billy Goat Industries 1803 S. Jefferson, Lee's Summit, MO 64063 816-542-9666	OB 1600	8 hp	Twin-cylinder engine, hydrostatic rear wheel drive, powerful 14-blade fan.
Cushman Inc. 900 N. 21 St., PO Box 82409 Lincoln, NE 68501 800-2280-4444	Promark Blower FMB-C	PTO driven	450 lbs., 180 degree chute rotation, 250 mph, 2600 cfm.
D.E. Wolfe Metal Fab. 2555 Leechburg Road, Lower Burrell, PA 15068 412-339-7790	Saxon Blower-Vac	PTO driven	Capacity to blow 10 to 15 feet under normal conditions, 80" wide, 71" high, 104" long, operated completely from tractor seat.
Deere & Company John Deere Road, Moline IL 61265 309-752-4459	529/ 165 lbs.	5.2 hp	Vacuum/blower, 30-inch front nozzle, nozzle height from 1/2 to 4 inches, pivoting front axle, 110 mph.
Encore Mfg. Co. 2415 Ashland Ave., Beatrice, NE 68310 402-223-4103	Pro-Line	8 hp	6-bladed impeller for noise abatement, heavy-duty front caster and pneumatic rear wheel, adjustable chute.





mph = air discharge speed
cfm = cubic feet per minute (area clearance)
dba = decibel rating

pack model), reliability, the availability of parts and/or service, fuel capacity, and, depending upon where they intend to use them, noise level.

If power was the only consideration, power blowers could be made to literally move the world.

But, landscape service—like life—isn't that simple.

Suppliers must provide machines that can blow away material, but also machines that are quiet enough to be used in residential neighborhoods. Near homes with open windows. Near patios. Near relaxing neighbors.

Power blowers are frowned upon by some people in some communities. Most of the unhappiness with blowers—and the resulting media—has been concentrated in California. At least 12 communities there have banned blowers. Another 30 communities limit their use.

More and more, anti-power blower feeling is surfacing in neighborhoods—affluent ones usually—in other states. They're likewise passing laws to restrict or outlaw blower use.

The problem: inconsiderate operators.

Sure, mowers, chainsaws and other

Continued on page 19

WALK-BEHIND COMMERCIAL BLOWERS

Company	Model/Wt.	Displacement/ power	Features
Jacobsen Textron 1721 Packard Ave., Racine, WI 53403 414-637-6711	Front-Mount Unit	PTO driven	350 lbs. 24 sq. In. outlet which rotates 220 degrees, 225 mph, 3,200 cfm, no-tool attachment to Jacobsen Turfcat in minutes.
Landscapers Supply Corp., Inc. PO Box 343 1 Bridge Stg., Garnerville, NY 10923	Commercial Blower	8hp	13-gauge handle, blower housing mig welded, 280 mph, 3200 cfm.
LESCO, Inc. 20005 Lake Road, Rocky River, OH 44116 216-333-9250	Walk-Behind Blower	8hp	Heavy-gauge steel, 128 lbs., 1.25 gal. fuel capacity, A frame handles, 175 mph, 2500 cfm.
Little Wonder 1028 Street Road, PO Box 38, Southampton, PA 18966 215-357-5110	10 models of blowers	N/A	12-gauge still housing, seams arc welded for maximum air discharge, 160 mph.
Parker Sweeper Co. 91 Bechtle Ave., PO Box 1728 Springfield, OH 45501 513-323-4901	Hurricane HC	8 hp	Adjustable air deflector controlled at handle, large tires, self-propelled with 5 forward speeds, neutral and reverse.
Steiner Turf Equipment Penn Ave., Box 85, Orrville, OH 44667 216-683-0055	PB 100	PTO-driven	95 lbs., 33 inch wide, 8-blade fan, fan speed equals engine RPM, 90 mph blow power.
Tempest Controlled Airstreams 4924 E. Lansing Way, Suite 103, Fresno, CA 93727 800-346-2143	TGB-274-H	13 hp	133 lbs., 27-inch blade, 32 inches high, 30.5 inches wide, 25 inches deep, 15200 cfm, several other gas and electric-driven sizes and models.
Yard Vac Products Inc. 3849 E. Ventura, Fresno, CA 93702 209-251-7125	Hurryclean 8	8 hp	150 lbs., nozzle adjustable in 3 directions, 150 mph, 5600 cfm, welded steel construction.

BACKPACK COMMERCIAL BLOWERS

Company	Model/Wt.	Displacement/ power	Features
Ariens Company 655W. Ryan St., Brillion, WI 54110 414-756-2141	BB430/ 24.9 lbs.	43 cc/ (2.3 hp)	Backpack style double harness system and waist strap, transistorized ignition, 218 mph, 540 cu. ft. per minute (cfm).
Atwater Strong Inc. 1355 Evans Ave., Akron, OH 44305 216-630-9822	43-T/ 21 lbs.	43 cc/ (3 hp)	Extra long straps, built-in handle, 225 mph max air speed, 741 cfm.
Carswell Import & Marketing 3750 N. Libery St., Winston-Salem, NC 27105 919-767-9432	FL-411/ 17.6 lbs.	40.2 cc/ (2 hp)	Two-cycle Robin engine with solid state ignition, 186 mph, 385 cfm.
Deere & Co. John Deere Road, Moline, IL. 61265 309-765-9432	5E/ 19.8 lbs.	43.9 cc	Locking blower tubes, 50.7-once fuel tank, 180 mph, 388 cfm
Echo Incorporated 400 Oakwood Road, Lake Zurich, IL 60047 708-540-8400	PB/4600/ 22 lbs.	44 cc	2-quart fuel tank, purge-equipped adjustable diaphragm carburetor, 70 dba, 180 mph, 370 cfm.
Homelite Div., Textron, Inc. 14401 Carowinds Blvd., Charlotte, NC 28273 704-588-3200	BP 250/ 12.7 lbs.	25 cc	Solid-state ignition, 21-oz. fuel capacity, two-chamber muffler, 69-70 dba, 150 mph, 375 cfm.
LESCO, Inc. 20005 Lake Road, Rocky River, OH 44116 216-333-9250	LBB 4000/ 22 lbs.	39.7 cc	Electronic ignition, single-cylinder engine, diaphragm carburetor, 180 mph, 388 cfm.
Northeastern Associates 23 "I" Commerce Road, Fairfield, NJ 07004 210-227-0359	Stihl BR 320, BR 400/ 18.5 lbs.	44.9 cc 56.5 cc	Electronic magneto ignition, 3.17 pint fuel capacity, BR 320 has 156 mph, 435 cfm; BR 400 has 170 mph, 476 cfm.
Redmax 1505 Pavilion Place, Norcross, GA 30093 404-381-5150	EBA 440, 22.5 lbs.	41.5 cc	Force-ventilated backpad, electric start, flexible hose pipe extension, solid-state ignition, 180 mph, 570 cfm.
Shindaiwa Inc. PO Box 1090, Tualatin, OR 97062 503-692-3070	EB-45 21.3 lbs.	41.5 cc 2.3 hp	Extra-large air filter, electronic ignition, diaphragm carburetor with primer pump, 212 mph, 493 cfm.
Snapper Power Equipment 535 Macon Road, PO Box 777, Mc Donough, GA 30253	Snopper Backpack	40.6 cc 3 hp	250 mph, 580 cfm, 75 dba.
Solo Inc. 5100 Chestnut Ave., Newport News, VA 23605 804-245-4228	449L/ 25 lbs.	5hp	3-gal. fuel capacity, ergonomically designed back pad, antivibration features, 224 mph, 468 cfm.

mph = air discharge speed cfm = cubic feet per minute (area clearance) dba = decibel rating

BACKPACK COMMERCIAL BLOWERS

Company	Model/Wt.	Displacement/ power	Features
Tanaka Ltd. PO Box 3014 Bothell, WA 98021 206-481-2000	TBL-500/ 24.9 lbs.	43 cc/ 2.3 hp	Transistorized electronic ignition, exclusive backpack frame, cushioned straps, 218 mph, 540 cfm.
Teufel Nursery Inc. 12345 NW Barnes Road, Portland, OR 53954 608-429-3402	EB 45/ wt. N/A	41.5 cc/ 2.3 hp	Spark arrester muffler, grooved backpad, 212 mph, 493 cfm.
Toro Company 8111 Lyndale Ave. S., Bloomington, MN 55420 612-887-8258	30941	41 cc	Mitsubishi, 2-cycle engine, fingertip starter, backpack pad with adjustable strap, 160 mph.

mph = air discharge speed cfm = cubic feet per minute (area clearance) dba = decibel rating

commonly used landscape tools make noise, but it's the turbo-whine of the power blower that causes peoples' teeth to grind. (Presumably the operator is wearing ear protection.). This is particularly true when the macines are run at full power or at inappropriate times.

At least one manufacturer, Echo Inc., Zurich, Ill., would like to see noise ordinances based on the American National Standard (ANSI B 175.2/1990). This standard calls for sound measurement at 50 feet in a park-like setting, the blower running full throttle.

Echo also offers a "Be Smart!" program. This program uses posters and supporting literature, a video, and hands-on demonstrations to educate users on the safe and polite use of power blowers.

Meanwhile, manufacturers strive to provide users with *quieter* power blowers.

Let's not over-emphasize the negative side of power blower use though. After all, more than 99.9 percent of American communities have no restrictions on operating them. Green industry professionals—the vast majority anyway—use power blowers sanely. They also use them for a growing number of tasks. That's why power blowers come in such a variety of styles and sizes.

Professionals mostly use backpack and larger models. There are, however, occasions when smaller handheld units can be handy.

The proper use of a power blower, like any other valuable landscape maintenance tool, streamlines otherwise dull and labor-intensive work. In that way, it makes green industry professionals' services more affordable and valuable to customers.

—Ron Hall

DECIBEL SCALE

Decibels

200
190 — Rocket lift-off
180
170
160
150 — Jet take-off
140
130 — Power drill, Rock concert
120 — Subway
110 — Nightclub
100 — Factory machinery
90 — Blender
80 — Heavy traffic/noisy restaurant
70 — OPTIMUM BLOWER VOLUME
60 — Average conversation
50
40
30
20 — Whispering at 5 feet
10
0 — Faintest sound normal hearing can hear

Blower safety precautions

■ The gasoline-powered blower is a simple landscape maintenance tool. It requires no extended training to use effectively.

But every operator should follow these safety precautions when using one:

- Depending on the sound level of the machine, hearing protection may be needed.
- Wear eye protection. These units throw material.
- Do not allow bystanders in the work area.
- Do not point the blower nozzle in the direction of people or pets.
- Do not wear loose clothing, scarfs, neck chains, etc. that can be drawn into rotating parts.
- Use a face filter mask when operating the blower in dusty conditions.
- Stop the engine before installing or removing attachments. These will help you keep hands and fingers away from rotating parts.
- Do not operate gasoline-powered blowers in unventilated areas.
- Do not smoke while handling fuel.
- Do not refuel a hot or running engine.
- Move at least 10 feet away from the fueling point before starting the engine.

Mower rehabilitation for quick spring starts

Don't just park 'em and leave 'em. Now's the time to get your mower fleet ready for storage, and ready for spring.

Radcliff: Use only specified oil to prevent "engine death."

■ It's the end of the season. Your crews did great work. The company made a healthy profit. There were minimal accidents, and no lawsuits (??).

Time to relax, right?

Only if you've seen to it that the mower fleet has been stowed properly. If so, you should be able to press it into action in case of an early spring—say, February.

Mower rehabilitation is probably the most important equipment duty you can practice, if you want to start this year with minimal hassles and expense. And as an extra incentive, take a moment to tally up your total investment in equipment.

Some might be content to just stow their mowers away. If it's not being used, what can happen, right?

Three months in cold storage can cause plenty to happen if you don't get that machine prepped for hybernation. Here's what some industry experts told LANDSCAPE MANAGEMENT about mower rehabilitation, A to Z.

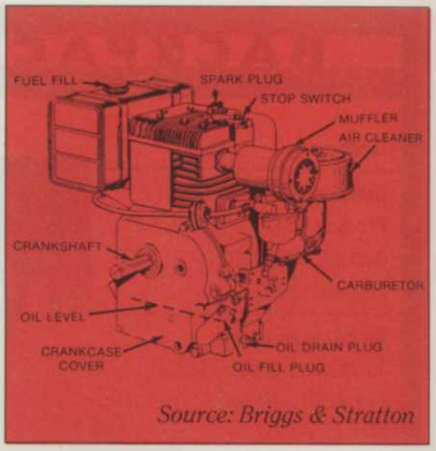
Dave Buchanan, Jacobsen: Look at the blades. A dull blade is going to use more power. It might be a good idea to store blades in a climate controlled area.

If you're anxious to get out there (in spring) you might want them sharpened and balanced beforehand. Balance has a lot to do with keeping vibration off the operation of the machine. It's simple, and will save you from headaches down the road.

Tom Kane, national training manager, Kubota Tractor Corp.:

● Condensation can be a significant hazard to a diesel tractor during the winter. After draining, prime the fuel system and purge the air. Run for at least 10 minutes under a light load so that protective oil will circulate throughout the entire fuel system. If the tractor is going to set for an extended period, repeat at six-month intervals.

● Check engine gaskets. Leaking or worn seals can admit contaminants.



Source: Briggs & Stratton

● If the tractor operates with an attached mower, inspect the mower for oil leaks. Remove and sharpen the blade, and clean deck underside. Clean the air filter and reinstall it correctly.

Bruce Radcliff, instructor for Briggs & Stratton's customer education department: The main mistake people make is not draining the gasoline.

There is a volatility change. Gasoline blended in September has a different volatility rate (which is how fast that liquid becomes a gas). If you use summer gas in the winter time, that summer gas will be "depressed" and doesn't become nearly as volatile. Even if you start the engine up in the fall, you need to drain the fuel again and put in current fuel.

Paul Scholten, manager of service and technical publications, Kohler Co.:

● Add a gasoline stabilizer in the fall. This eliminates the need for draining the gas tank.

● Add the proper amount of new oil, using the specified oil weight.

● Remove the spark plug and replace with a new one. In the fall, drop a tablespoon of motor oil into the cylinder. Manually crank the engine several times to help coat the cylinder walls and protect them from water and condensation.

● Remove and clean the air filter per owner's manual instructions.

● Clean the battery terminals. Make sure the battery is charged and have it tested, if necessary.

Bob Tracinski, John Deere: He suggests that for Deere mowers, use Deere's gasoline storage stabilizer or an equivalent. Follow label directions. Also:

● Replace the spark plug, but leave plug wire disconnected.

● Lubricate the rear axle bearings and wheel bearings.

● Close the fuel shutoff valve.

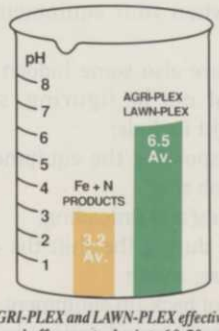
● Do not store mower with fuel in tank in a building where fumes may reach an open flame or spark.

Harry, right, and Larry Carpenter of The State Street Saw Shop, Salem, Ore.: Let the pros handle the big engine tear-downs.

Agri-Plex® and Lawn-Plex® micronutrients solve your tank mix problems.

Turf management professionals around the world are finding that AGRI-PLEX and LAWN-PLEX are the liquid micronutrients formulated to truly *buffer* your tank mix to pH 6.0-7.0.

Don't be misled by other claims about pH. Most liquid micronutrients, especially those containing nitrogen, are formulated at a pH of 2.0-3.0 and, at suggested use rates will lower your tank mix to around 3.0-3.5, even when pesticides are added to the tank. Regardless of the water source, these numbers hold true because, practically speaking, water as well as pesticides do not have the ability to resist change in pH. A rare exception is water that is high in bicarbonates.



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Are rebuilds necessary?—Once a year or sometimes more often, you can do a 'power tune-up,' Radcliff advises. This consists of simply removing the cylinder heads, cleaning out carbon, and making all the basic adjustments to make sure the engine is performing at its maximum. A lot of rebuilds can be saved by simple, basic maintenance.

Let the pros do it—"I don't see any reason for an untrained person to do any more than remove the cylinder head of an engine," says Radcliff. "Taking a sump or side cover off to look inside of the engine will usually bring more trouble than good. Engines are becoming more and more complex as time goes on. Things that even dealers have to refer to manuals about certainly shouldn't be in the hands of someone who hasn't even read the manual. You need the understanding of the physics of an engine."

Attendance at engine seminars gives crews engine know-how.

Use the specified oil—"I cannot stress it enough," Radcliff says. "(Briggs & Stratton) changed oil recommendations to a straight 30-weight as opposed to multi-viscosity oil; typically you'll get much better oil consumption numbers than you do with multi-viscosity oils. They don't burn nearly as much. With emission controls and trying to make the engine last as long as possible, we want to make sure we use the right oil and change it at frequent intervals.

Radcliff calls wrong oil or bad oil, "Probably the number one cause of engine death."

—Terry McIver

More 'extended storage' tips:

✔ Wash, clean and completely lubricate the mower. Touch up scratched and unpainted areas, and wipe down all metallic surfaces with a medium weight (SAE 30) motor oil to prevent rust.

✔ Drain fuel from the fuel tank. After fuel is drained, start the engine and run it until the fuel in the carburetor is exhausted.

✔ Drain and change engine oil.

✔ Clean the tires and check tire pressure. Jack up the mower so the load is off the tires. Protect mower tires from sunlight.

✔ Store in a dry and protected place.

Source: The Bunton Co.

Calculating mowing costs

Don't forget to add in your desired profit margin when calculating what to charge the customer!

■ Figuring out how much it costs to mow a given area is not entirely dependent on the area's size, says Howard Mees of Environmental Care Inc., San Diego, Calif.

The service provider must also take into account site considerations, as well as equipment and labor costs.

Site considerations include things like areas that are too wet or over-fertilized; small, tight locations with a lot of detail; and so on. "Picking the right piece of equipment to get optimum performance in a given location will affect production," Mees explains. "If a 21-inch mower is used on a five-acre park, the cost per acre of cutting can be quite high."

Here is the procedure Mees uses to calculate his mowing costs per property.

Equipment costs—No matter what kind of mower you choose to use for particular projects, you are still faced with the initial purchase cost of the machine. And once you've made the purchase, you must spend money to maintain that piece of equipment.

Mees: average cost is $2.61

"There are not only the standard expenses of gas, oil and rubber goods, but also your preventive maintenance functions, as well as your shop time expense," notes Mees. "You also have parts, labor and downtime expense when your equipment is in for repairs."

There are also some hidden costs that you might not be figuring, says Mees. These might include:

- transporting the equipment to and from the job site;
- loading and unloading;
- time during the shift the equipment is not in use; and/or
- cost of back-up equipment.

"The above considerations have a dollar value that you can attach to them," Mees says. "You can then see how many hours you actually are operating the machine and this will give you an equipment cost per hour to own and operate that machine."

Some average costs of operation—as provided by experience, conversations with other contractors Mees talked to, and input from manufacturers—are:

gas and oil	54 cents/hr.
repair	46 cents/hr.
cost of purchase	55 cents/hr.
vehicle operation	13 cents/hr.

"The average cost per hour, not allowing for the size of the equipment, is about $2.61 without profit and overhead," notes Mees.

Operator costs—Next, you figure out how much you are paying the operator per hour, including downtime and benefits.

A formula for calculating this number can be found in the June, 1991 issue of this magazine, on pages 32-33. Typically, total operator costs run about 31 percent over base hourly wages. This figure includes statutory costs like FICA and worker's comp, and voluntary costs like insurance, retirement and uniforms.

Add together equipment costs and labor costs per hour and you get the cost per hour of mowing a particular area.

This, of course, is not *what you charge*!

Other costs—The average overhead, which comes from a study done by the Associated Landscape Contractors of

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the ability to make all the right moves for mowing quality and time-saving productivity.

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Zero-radius maneuverability

Outfront reachability and "no shift" reversability

Square corner turnability

Uncanny trimability

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Circle No. 109 on Reader Inquiry Card

CALCULATING MOWING COSTS

Line	Description	Example	Your worksheet
1.	Sq. ft. to be mowed this property	120,000	
2.	Production rate (sq. ft. per hr.)[a]	60,000	
3.	Hrs. of production this property (Line 1 divided by Line 2)	2	
4.	Cost of equipment purchase	$12,000	
5.	Expected equipment life (yrs.)	3	
6.	Hrs. mowed per yr.[b]	1,560	
7.	Equipment life in hrs. (Line 5 times Line 6)	4,680	
8.	Equipment cost per hr. (Line 4 divided by Line 7)	$2.57	
9.	Gas and oil cost per hr.[c]	$0.48	
10.	Repair costs per hr.[c]	$0.44	
11.	Total equipment cost per hr. (Add Lines 8,9,10)	$3.49	
12.	Labor cost per hr.[d]	$11.00	
13.	Operating costs per hr. (Add Lines 11,12)	$14.49	
14.	Overhead per hr. (Line 13 times 0.31[e])	$4.49	
15.	Total operating costs per hr. (Add Lines 13,14)	$18.98	
16.	Profit % desires[f]	0.20	
17.	Profit per hr. (Line 15 times Line 16)	$3.80	
18.	Selling price per hr. (Add Lines 15,17)	$22.78	
19.	Total selling price this property (Line 3 times Line 18)	$41.56	
20.	SELLING PRICE THIS PROPERTY PER SQ. FT. (Line 19 divided by Line 2)	$.00069 or .07 cents/sq. ft.	

Footnotes

[a] - from accompanying chart
[b] - based on 30 hrs. actual production per week
[c] - Howard Mees/Environmental Care research
[d] - approximation: see LM June, 1991 issue (apprximate hourly wage + 31%)
[e] - 0.31 is average based on Associated Landscape Contractors of America survey
[f] - arbitrary: put your profit margin here

America a few years back, is 31 percent over and above this figure. Then, add to this the profit margin you would like to see and you come up with a selling price.

"Taking these numbers further and using an $8 per hour labor rate (including downtime and benefits), the cost to mow an average area per square foot is $.00069 (or 7/10ths of a cent)," notes Mees.

"To come up with some more meaningful numbers," he continues, "I looked at various data to arrive at a more complete number. This included mowing, detail work, clean-up, irrigation checks and fertilization.

"The range was .013 cents per square foot for larger, easy areas to a high of .049 cents per square foot for tougher, detail-oriented sites. The average for the numbers I ran was .031 cents per square foot for turf areas needing the complete service."

Mees makes one final point: in-field conditions are infinitely more valuable than these overall averages when making true calculations of what it costs to mow.

How much lawn can you mow in an hour?

Square feet per hour

Deck size	2.5 mph	3.0 mph	3.5 mph	4.0 mph
21"	18,480	22,176	25,872	n/a
26"	22,880	26,456	32,032	36,608
28"	24,640	29,568	34,496	39,424
30"	26,400	31,680	36,960	42,240
32"	28,160	33,792	39,424	45,056
38"	33,440	40,128	46,816	53,504
42"	36,960	44,352	51,744	59,126
48"	42,240	50,688	59,136	67,584
60"	52,800	63,360	73,920	84,480

- less than 1/2 acre (21,780 sq. ft.)
- 1/2 to 3/4 acre (32,670 sq. ft.)
- 3/4 to 1 acre (43,560 sq. ft.)
- 1 to 1½ acre
- 1½ to 2 acres

Source: The Ariens Co.

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Circle No. 201 on Reader Inquiry Card

Spring annuals for the landscape

Improved annuals have more color, uniformity and disease resistance. Your biggest concern is proper plant selection.

by Dr. Lois Berg Stack, extension specialist, University of Maine

■ In the past 40 years, since the introduction of F1 hybrids revolutionized the bedding plant industry, thousands of improved annual flowers have been introduced. Each year, annuals offer more color, greater uniformity, increased disease resistance, enhanced durability, improved growth habit and better garden performance.

The first step in creating effective and productive annual flower gardens is good plant selection. Whether you are looking for old reliables or new introductions, you can narrow the options by following these few simple rules:

1. Match the plants to the environment. There are flowers for every location, wet or dry, sunny or shady—but there is no single annual that will adapt to every environment.

2. Choose plants that look good all season. Some annuals stop flowering in the heat of midsummer. Others are naturally short-lived. Annuals vary by species (petunias vs. marigolds, for example), but cultivars within a single species also vary ('Apricot Brandy' vs. 'Red Fox' celosia, for example). Where can you see annuals in real-life situations, in order to assess which ones will perfom best? Visit public gardens, check out university and commercial trial gardens, ask other landscape professionals ask the greenhouse growers.

(Table 1 lists some annuals that adapt well and perform in a variety of environments, and under a broad range of cultural management levels.)

3. Select low-maintenance annuals. "Low-maintenance" is a relative term when applied to annual bedding plants, since the process of planting each year is a high-maintenance task.

"Low maintenance annuals" do not require frequent pesticide application, deadheading (removal of old flowers to promote development of new ones) or other time-consuming procedures.

The *Zinnia elegans*. Zinnias can be seeded directly into gardens after frost.

Don't skimp on quality—Evaluate plant quality by looking for good green color, lack of insect and disease problems, good flower bud count (in flowering annuals), healthy root systems, thriftiness and uniformity. When any of these traits are missing, you may not be able to tell exactly what went wrong, but you know that one or more stresses were at work. A stressed plant will never achieve its full potential, and if you can't tell what the stress was, it

The silver-leafed "Dusty Miller" requires full sun, but little maintenance.

will be difficult to compensate for it after the plants are in the landscape.

Growers who produce high quality plants can provide an extra service: they can recommend colorful, high performance, low maintenance annuals for specific sites. They can even give you a projected maintenance schedule. Take advantage of the grower's knowledge resource.

The lowest-priced annuals are not always the best buy. Consider the relationship among quality, price and value. A high-quality bedding plant is worth more than a low quality one, because it will perform better. A high-quality plant requires more input (control of the production environment, pest management, proper fertilizer application, etc.), and hence may legitimately cost more money. But if that investment of additional cents per plant pays off in higher performance in the landscape, then the investment is a good one.

Planting tips—Here are some tips for planting annuals in the spring:

- Pinch back leggy seedlings at planting time. Petunias often become a bit leggy in the greenhouse. If pinched back at planting time, they may take a bit longer to flower, but they will branch more and give more color in the long run.
- If you apply a pre-emergence herbicide before planting a flower bed, rototill and rake out the bed, apply the granules and rake in lightly. Plant the young seedlings through the layer of soil containing herbicide granules, making sure the root ball penetrates slightly below the herbicide layer. Many transplants suffer root damage when new roots grow into the soil layer containing herbicide granules.
- When planting annual seedlings, remove plants from their containers even if the containers are peat or fiber. Until these degradable pots break down, they restrict young root growth. Be sure to cover the entire root ball with soil, particularly if the plants were grown in a peat-lite mix. These soiles mixes dry out more quickly than the surrounding native soil. Leaving the top of the root balls exposed at soil surface will dry out and stress young plants.
- For better root development, allow young annuals to become established for a few weeks before mulching. Do not apply mulches in the spring, as they cool the soil, which inhibits rapid plant development. Allow the seedlings to develop for a few weeks, then weed, water and mulch.
- Some annuals can be sown directly in the flower bed with excellent results.

Sweet alyssum, a low-growing edging plant, can be seeded into the garden in early spring, and will provide good color all season. Moss rose, another edging plant, develops very quickly from seed. Sow the seed after frost danger has passed.

Dwarf French marigolds can be seeded directly into the garden, producing flowers in 8 to 10 weeks. Zinnia seedlings often become quite leggy in the spring greenhouse, but when they develop quickly in the heat of summer, they are much stockier. A strong, well-branched, healthy crop of zinnias can be grown by seeding directly into the garden after all danger of frost.

—Dr. Lois Berg Stack is an extension specialist in ornamental horticulture at the University of Maine.

TABLE 1

20 HIGH-PERFORMANCE SPRING ANNUALS FOR 1992

Full sun (Require minimal maintenance)	
Canna x generalis ("Canna")	'Tropical Rose,' 3 feet tall; grow from seed
Catharanthus roseus ("Periwinkle")	'Cooler' series and 'Pretty in Rose' 1.5 to 2-feet
Cleome hasslerana ("Spider Flower")	White, pink, lavender; 4 feet
Dyssodia tenuiloba ("Dahlberg Daisy")	Free-flowering yellow daisy; 6 to 8 feet
Gaillardia pulchella ("Annual Blanket Flower")	'Red Plume' needs deadheading
Petunia x hydrida ("Petunia")	Multiflora types best for mass planting
Salvia farinacea ("Mealycup Sage")	'Victoria' is 24 feet tall; vibrant blue flowers
Sanvitalia procumbens ("Creeping Zinnia")	Drought-tolerant; 8-inch spread
Senecio cineraria ("Dusty Miller")	All of the silver-leaved variety are excellent
Zinnia angustifolia ("Narrow-leaved Zinnia")	'White Star' the talk of 1991 trials
Novelty plants (Have a unique appearance)	
Capsicum annum ("Ornamental Pepper")	6-12 feet plants valued for colored fruits
Ocimum basilicum ("Sweet Basil")	Try 'Spicy Globe' (10-inch mound) or 'Purple Ruffles' (12-inch purple leaves)
Pelargonium species ("Scented Geraniums")	Many types, 12 to 30 inches tall; plant where pedestrians can appreciate
Salvia virdis (no common name)	An 18-inch plant with blue, pink or white top leaves
Verbena x hydrida ("Verbena")	'Peaches & Cream' is an 18-inch plant with pastel flowers
Shade plants (These annuals complement impatiens gardens)	
Begonia x semperflorens-cultorum ("Wax Begonia")	10-12 inches tall; do well in shade; many do well in partly sunny areas
Begonia x tuberhybrida ("Tuberous Begonia")	'Nonstop' and 'Nonstop Ornament' are 12 to 18 inches tall; vivid warm colors
Lobularia x maritima ("Sweet Alyssum")	4-10 inch spreading plants; sweet-scented flowers
Nicotiana alata ("Flowering Tobacco")	18-30 inch upright plants; vibrant pink, white, red or green flowers
Viola x wittrockiana ("Pansy")	8-10 inches; most newer types flower all season, despite heat

Source: Dr. Lois Berg Stack

CONSIDER SOIL QUALITY

Temperature	Moisture levels
Texture	Nutrient levels
Drainage	pH

CONSIDER TEMPERATURE

- Daily fluctuation
- Spring and fall frost dates
- Proximity to temperature-altering objects such as buildings or bodies of water
- Light intensity, day length and reflection
- Precipitation: amount and regularity throughout the growing season
- Wind and weed problems

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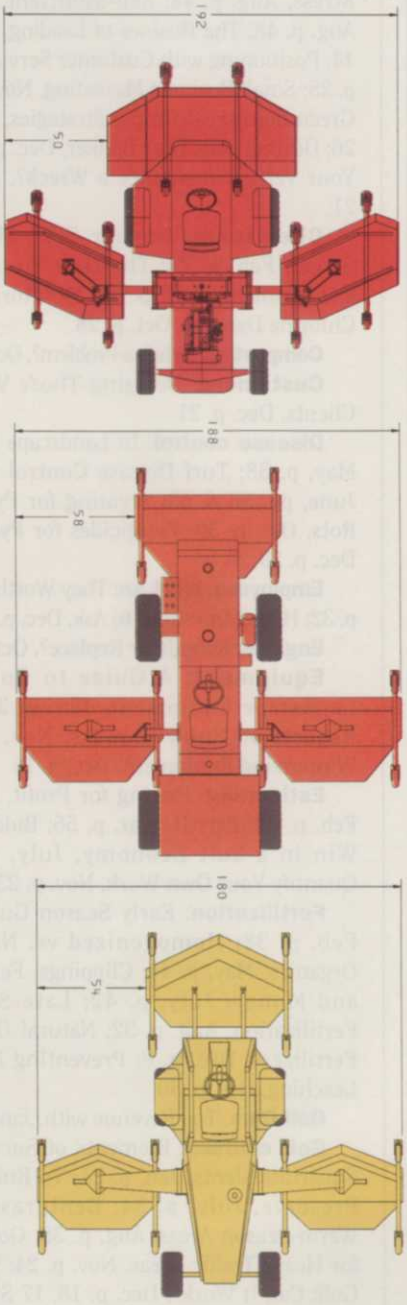
pacity Mower That ike A School Bus.

Toro's outboard cutting units also include an exclusive break-away protection feature. Should the operator misjudge distance, the wings will pivot away from the object that has been hit.

Another Toro exclusive allows you to raise one or both of the outboard cutting units inside the traction unit width. The 580-D can then trim between objects less than 8 feet apart with the 92" Triflex® cutting unit.



The 580-D's wide stance and short wheelbase give it maneuverability and stability. A short 76" wheelbase lets you turn an 18" uncut circle without braking. And Toro's exclusive swept-forward wing design keeps the tips of the outboard cutting units in line with the front drive wheels improving operator control and visibility.

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Tifton 57: Durability, insect resistance praised

Although athletic fields will benefit mostly from this grass, other turfgrass areas suffering from intensive use might be wise to try it.

by Tom Mascaro

■ Tifton 57 bermudagrass has proven to be unsurpassed for football fields, baseball fields, playgrounds and other sports fields in the southern U.S., where maximum wear resistance is required.

Since its development in 1947 by Dr. Glenn Burton, it has almost faded into oblivion. Since bermudagrass development became focused on better grasses for greens and fairways, Dr. Burton eventually introduced Tifton 419, Tifton 328 and Tifdwarf. As these grasses became popular, Tifton 57 faded into the background.

However, some athletic field managers today are re-discovering Tifton 57.

"We have 7.5 acres of Tifton 57 and it is my favorite to work with," says Lanny Dixson, CPCO with the Broward County schools in Florida. "I have found it hardier than the 419, Tifway 2 and common bermuda. Our sports fields continually recover quicker under traffic stress, drought stress and any herbicide injury that we may cause it."

Lanny Dixson, left, and Ed Birch, supervisor of turf for the Broward school.

Dr. Burton himself, to this day, has a good-sized plot that has had no care—other than spring fertilization and thatch removal—yet still holds excellent turf after 40 years.

Tifton 57 has many qualities that make it superior to common bermuda, among them:

- Ability to produce a denser, more weed-free turf.
- More resistance to insects and diseases.
- Longer-lasting green color.
- Less tendency to be injured from overseeding, and faster spring recovery.
- Less fertilizer requirement.
- More drought- and shade-tolerance.

"I wish that all of our fields were planted with this very durable turfgrass," Dixson continues. "I can totally understand why golf courses would be more interested in Tifton 419; but for sports facilities, I vote for Tifton 57—hands down.

"Although this turfgrass has thicker stolons and larger leaf blades and seems to experience leaf spot more frequently, I find it totally acceptable for our circumstances."

Another small inconvenience of using Tifton 57 is that of prolific seed-head production at certain times of the year. Dixson notes, "this is a little unsightly, but does not inhibit the field's playability."

Tifton 57 is, admittedly, too aggressive for golf greens and fairways. It has found a place on tees, since it can take the beating that these areas are subjected to. Many of the older courses probably still have Tifton 57 tees without realizing it.

Although athletic fields will benefit mostly from this grass, other turfgrass areas suffering from intensive use might be wise to try it.

For those who are interested, Dr. Burton has available two bulletins: Tiflawn (Tifton 57) Bermudagrass" and "Football Field Construction and Maintenance for the South." His address is: Principle Geneticist, Dept. of Agriculture, Georgia Coastal Plains Experiment Station, Tifton, GA 31793.

The Cooper City high school field is seeded with Tifton 57 bermudagrass. Benefits include a dense turf with long-lasting color.

—The author is a former golf course superintendent who is credited with inventing the first turf aerator. He lives in Oakland Park, Fla.

National standards for public ball fields? It could happen yet.

Beyond lining fields, filling holes, and reseeding, facility and parks and recreation managers must take a more critical look at the whole picture.

■ If you watch football, you've seen this—the 250-pound linebacker blasts the 220-pound running back out of bounds. The wildly spinning running back flattens a photographer. Or sends a rain of paper cups and liquid into the air as he bowls over a table just yards away from the playing field.

"There's something very wrong with this," says Francis "Bud" Cosgrove, who thinks this not uncommon scene indicates a peculiarly cavalier attitude toward safety and liability.

These types of safety issues aren't tied directly to the condition of a field's playing surface. They are field-related, however, and are ultimately the responsibility of the sports facility operator or the parks/recreation director.

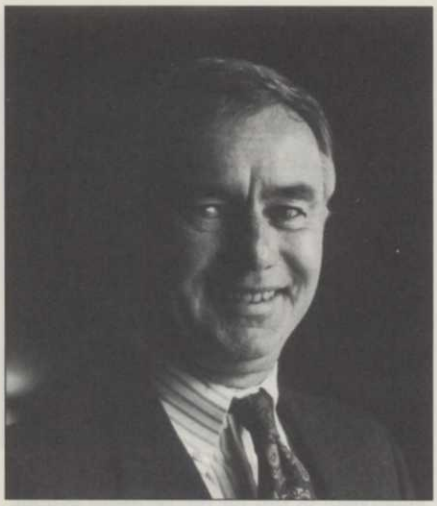
Cosgrove says two excellent reasons why sports and parks managers will have to broaden their view of field maintenance are: **(1)** the growing awareness of participant and spectator safety issues and **(2)** operator liability.

Cosgrove, with the Nassau County (Long Island) Recreation and Parks Department, is working on national minimum standards for ball field design and maintenance. Under the umbrella of the American Society of Testing Materials (ASTM), he's assembled a committee to start developing these standards.

These efforts, at least initially, focus on community softball and baseball fields.

Organizations such as the American Softball Association and the United States Baseball Federation, along with several sporting goods manufacturers, say they'll support Cosgrove's effort.

"The response so far has been excellent," claims Cosgrove.



Cosgrove: It's time to 'regroup' and establish minimum standards.

These proposed standards would include, but aren't limited to, maintaining the turfgrass playing surfaces.

Beyond lining fields, filling holes, and reseeding, facility operators and parks/recreation managers must take a more critical look at fences, the location of light poles, spectator seating, out-of-bounds areas, and more.

"We're going to have to be informed of not only the turf infield environment but of the entire picture," says Cosgrove.

"The first thing we as operators (recreation or parks managers) should be doing is understanding our exposure. We have to analyze the kinds of activities that take place on a regular basis on our facilities."

Cosgrove suggests parks and recreation managers also develop:

● **Written emergency and accident response and reporting methods.** When accidents come to light, there should be an established procedure to respond to them and document them. "If you ever have to go to court, this will be invaluable," he says.

● **Written operation safety guidelines.** Cosgrove says parks and recreation managers should more aggressively insist that amateur ball players, particularly adult players, take more responsibility for their own behavior. This past season his community also issued a list of 12 guidelines (no alcohol, women at least six months pregnant must get a doctor's permission to continue playing, etc.) that athletes must follow for safer play.

● **Written criteria for field maintenance.** A checklist is a must. "Once these checklists are in place, it's our obligation to make sure those fields are inspected and if there's a problem that it's corrected."

Cosgrove says although his initial plan involved establishing national minimum standards for softball fields (he thinks advances in ball and bat design and materials are making many ball fields obsolete), he feels standards can be drawn for other types of fields as well.

"What we're trying to say from an operators' point of view is, 'Let's regroup and think these things out because there are a lot of ball fields that just aren't acceptable,'" says Cosgrove.

—Ron Hall

Would minimum standards keep this from happening as often?

Public relations through community education

Providing information on lawn chemicals to children, adults and community groups is a smart PR practice.

by E.T. Wandtke

The competitive nature of the 1990s requires landscapers and lawn care companies to be more service-driven and to deal with public concern regarding chemicals and their effects on the environment.

Some companies see regulation and environmental concerns as something that will hurt business. The smart companies see this trend as an opportunity to gain a new competitive advantage.

How can you use this trend of increased regulations and environmental concerns to your advantage? With public relations—providing information and/or service to a community or group of individuals.

Today, companies often return a little of what they receive to the community. But imagine the decrease in hassles if the market was educated and really knew what you were doing when you provided your services.

Educating the public is the best possible public relations strategy. You should target your efforts in three areas:

1. Educate children on the dangers of misused chemicals and the importance of proper safety procedures.

2. Educate adults on typical control products and their environmental effects.

3. Contact and inform new arrivals in the community.

Educating children—When considering your company's future, it is easy to see that today's children are tomorrow's customers. By remembering this principle, you will be preparing for future success.

What better way to attack misconceptions before they develop than to educate the source?

You should visit schools and discuss the following:

- Playing safely: crossing the street, playing around vehicles, explanation of lawn treatment signs and what to avoid;
- Chemical safety: household products and products typically found in garages or basements.

Plan well and make sure you bring plenty of props. By bringing actual examples (i.e., handouts, stickers and even prizes), you can maintain the children's interest longer since their attention span is typically short.

Educating adults—Adult education is different than that of children, since you will need to concentrate more on specifics. I suggest you visit the PTA, women's league, church groups, garden clubs, and other groups. Preparation is again important, because typically, these groups express the most concern about the environment. Have a take-home brochure for them that explains which chemicals are dangerous, the steps lawn/landscape companies take to protect the environment, and the environmental effects of homeowner misapplication.

Educating new arrivals—This is perhaps the easiest: all you do is provide them with an information on what chemicals are used to service lawns in your market.

Special event publicity—Another effective method of securing publicity for your company is to run a special event in your community. Events can range from open-house tours to sponsoring community events. If these events are run correctly, they can increase your presence in the community.

If having a special event appeals to you, remember that planning the event is extremely critical and requires a high amount of coordination and forethought. Do not undertake this type of event for promotion if you have not read a book called "Publicity Power." Learn the ins-and-outs from experts who earn their living running special events.

Using the airwaves—Another public relations effort that is effective in many markets is participating in weekly call-in programs on turf and ornamental care.

At first, this may seem extremely challenging, but you might be surprised at how basic the questions can be. You do not need to know the answer to each question as it is posed; rather you need to know where to get the answer and how to execute the solution to given problems.

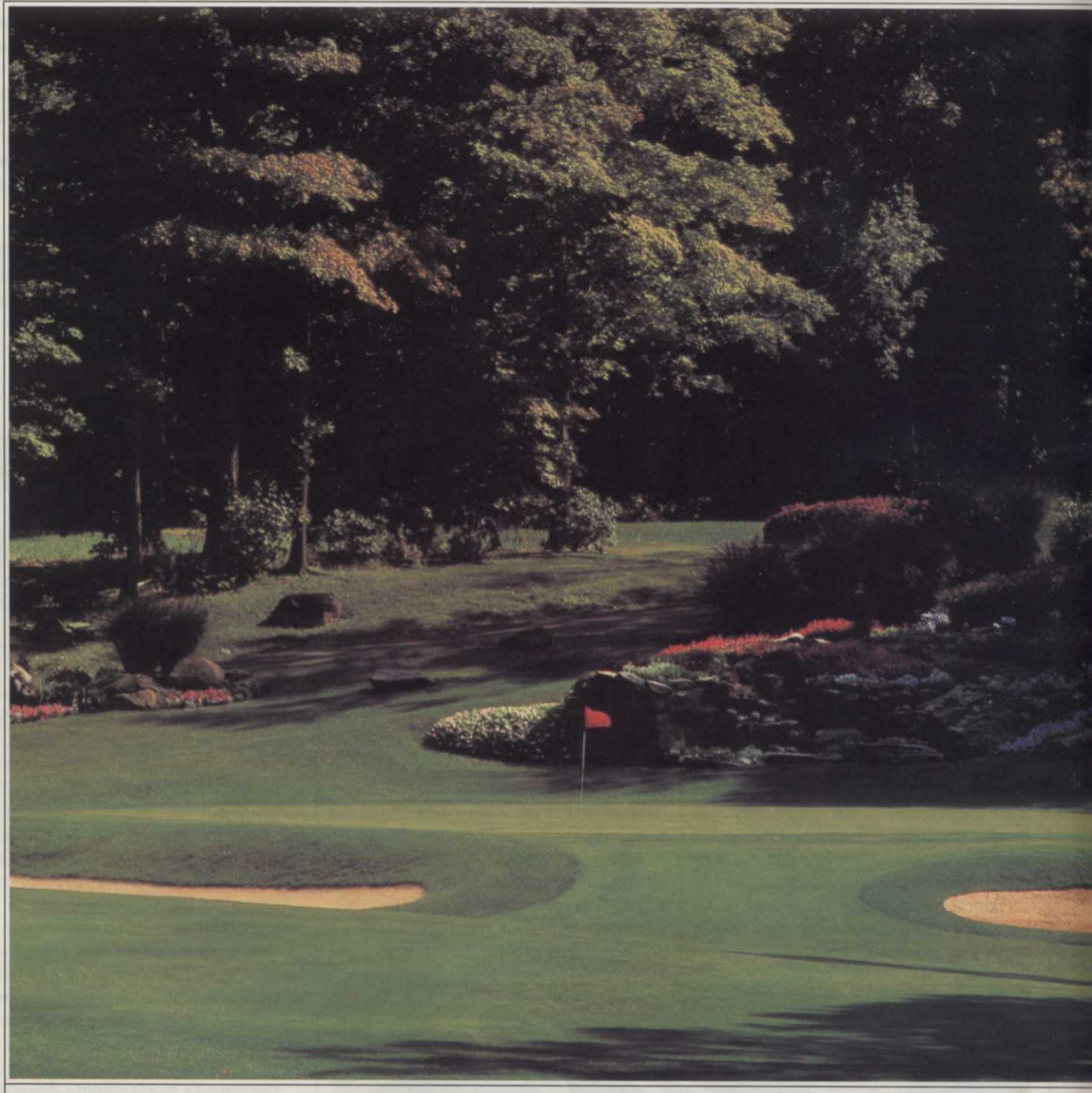
This is not for people who are not comfortable in verbally explaining and talking in clear and concise terms. Radio or TV can make or break a company. If you are scared, you should train, prepare, and wait for the right opportunity.

Community involvement—Many companies are finding that becoming involved in the community through existing organizations can be very helpful. The Rotary or Junior Achievement are but some of the types of organizations which meet specific community needs.

Community service is a good way to pay the community back for buying your services, and at the same time, secure additional company recognition.

—The author is a principle in Wandtke & Associates, a management and marketing consulting firm based in Columbus, Ohio. For more information, call (800) 966-3546

Fred Hower, right, "The Ohio Nurseryman," gives lawn and garden tips on "PlanTalk" airing over seven Ohio radio stations. At left is Dave Finley, program facilitator.



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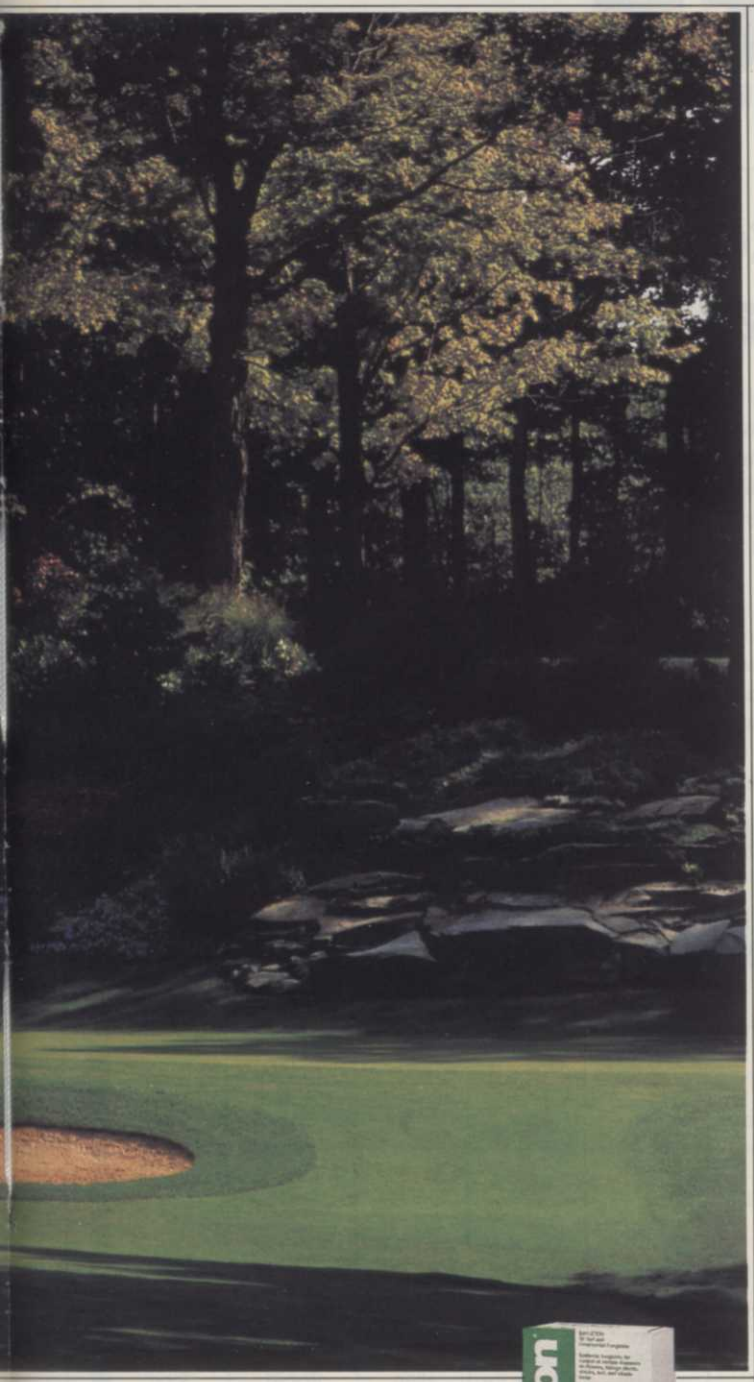

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Fertilizing to protect surface water quality

Fertilizer product knowledge and familiarity with the site may help minimize or eliminate adverse impacts on water quality.

By Robert J. Mugaas, Michael L. Agnew and Nick E. Christians

■ Few soils have enough natural nitrogen (N) to maintain desired turfgrass quality and recuperative ability through the growing season.

Nitrogen shortages can lead to slow growth, yellow plants, thin turf and increased disease. However, excessively high N levels can lead to excessive shoot and leaf growth, reduced root growth, low plant carbohydrate reserves, increased susceptability to environmental stress and some diseases.

One of the first important considerations in using N fertilizers responsibly is to match the site conditions and the desired maintenance program with proper sources.

Nitrogen fertilizer sources—Inorganic fertilizers such as ammonium nitrate and ammonium sulfate are all water soluble or quick-release N sources. That is, N becomes available as soon as water is applied to the turf. Their response is predictable and results are fairly immediate. However, their burn potential is high and the effects are shorter-lived.

On sandy soils, high rates of these products combined with high irrigation or rainfall may result in higher N losses due to leaching (the movement of water or nutrients toward—and possibly beyond—the turfgrass rootzone). Once beyond the rootzone, nitrates can continue moving through the soil and may find their way into water sources.

Organic fertilizer products, natural or synthetic, are those containing carbon (C) in their chemical structure. Nitrogen from natural organic sources becomes available only after the product begins to break down due to soil microbial action. Compared to quick-release sources, these have a lower leaf burn potential and can be applied at slightly higher rates without damaging the turf.

Characteristics of common turfgrass N sources are given in Table 1.

Nitrogen fertilizer use—The amount of N required by a lawn or turfgrass area depends on the type of grass plants and management practices.

On highly leachable soils, sands and sandy loams, the N application rates recommended in Table 2 may result in excessive loss of nitrate-N due to leaching. Where soluble N sources are used on these soil types, reducing the N rates to 0.25 to 0.5 lb. N/1000 sq. ft. per application may minimize potential nitrate-N leaching. If frequent, lower N applications are not practical, slow-release N sources may be a better choice for these soils. This practice is adaptable to

TABLE 1

CHARACTERISTICS OF COMMON TURFGRASS N SOURCES

Fertilizer source	N content %	Leaching potential	Burn potential	Low temp. response	Residual effect
Inorganic					
Ammonium nitrate	33-34	High	High	Rapid	Short
Calcium nitrate	16	High	High	Rapid	Short
Ammonium sulfate	21	High	High	Rapid	Short
Organic - natural					
Activated sewage sludge	6	Very low	Very low	Very low	Long
Manures	3-10	Very low	Very low	Very low	Long
Other natural products	3-10	Very low	Very low	Very low	Long
Organic - natural					
Urea	45-46	Moderate	High	Rapid	Short
Urea solutions	12-14	Moderate	High	Rapid	Short
Sulfur coated urea	14-38	Low	Low	Moderate	Moderate
Resin coated urea	24-35	Low	Low	Moderate	Long
Isobutylidene diurea (IBDU)	30-31	Mod. low	Low	Moderate	Moderate
Methylene ureas and ureaformaldehyde*	38	Low	Low	Low	Mod. long to long

** Some products may contain urea in addition to the ureaformaldehyde component*

Source: The authors

ELSEWHERE

Functions of micronutrients, p. 40

Root ball proportions, p. 42

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late-season N fertilization and may be especially true where sandy soils are close to surface or groundwater resources.

Watering practices that result in water movement beyond the rootzone may increase potential nitrate-N leaching. Frequent, daily irrigation during cool, moist periods can also increase leaching potential.

Irrigation practices that take into consideration the grass plant's needs during any weather cycle will be more effective. Adding enough water to compensate for that removed by plant uptake and evaporation will minimize potential N pollution problems from leaching. (Sloped areas may require more frequent but smaller amounts of water per application as they will be more vulnerable to runoff before ample water has infiltrated into the soil.)

Irrigation of 0.25 to 0.5 inches immediately after an application of a quick-release N source will help move the N into the surface soil where it can potentially be used by the grass plant. Also, it will be somewhat protected from runoff and possible volatilization back to the atmosphere.

Grass clippings should be returned to the lawn area to decompose and recycle nutrients back to the turf area. They should not be blown or raked into street gutters or onto sidewalks and driveways where they may be carried in runoff to surface water areas.

Nitrogen fertilizer product knowledge and familiarity with the site may help minimize or even eliminate potential adverse impacts on water quality.

General fertilization practices—Here are some general lawn fertilization practices which can help reduce potential water pollution:

- Be careful to never directly deposit or inadvertently apply fertilizer materials into lake areas. Never apply N fertilizers to frozen ground.
- Fill granular fertilizer spreaders on a hard surface where any spills can be easily cleaned up. Never wash off fertilizer spills into the street or other hard surface area where they can easily get into storm sewers and ultimately into surface water areas. Wash off granular fertilizer spreaders over turfed areas. Fill and clean liquid fertilizer applicators over turfed areas.
- Close the gate on the fertilizer spreader when crossing hard surface areas, or go back and sweep up the material and re-use it another time, or put it back into the spreader.
- Near shorelines, apply fertilizer around the perimeter of the property with a drop spreader to create a "buffer zone." The rest of the area further away from the shoreline can be fertilized with a rotary spreader. Since the perimeter has already been done with the drop spreader, it is not necessary to try to get close to the shore, potentially getting the fertilizer into the water. The same kinds of precautions should be taken when using liquid applications.
- Or, a buffer zone of unmanaged grasses or possibly natural vegetation could be left growing along shorelines. This can help prevent soil erosion and may also retain some of the nutrients that might otherwise run into the lake.
- Avoid getting fertilizer into natural drainage areas or pathways on a property. These may not necessarily be hard-surfaced areas, but can carry fertilizer directly into the surface water area before having the chance to infiltrate into the surrounding turf/soil area.

Improper turf fertilizer management and use may contribute to potential pollution of surface and ground water resources. However, combining appropriate landscape management practices with a modest lawn fertilizer program may further reduce surface water pollution.

—Robert J. Mugaas is Hennepin County extension horticulturist with the University of Minnesota. Michael L. Agnew is extension horticulturist/turf with Iowa State University. Nick E. Christians is professor of agriculture with Iowa State University. This article originally appeared in "Hole Notes," a newsletter of the Minnesota GCSA.

TABLE 2

ANNUAL NITROGEN REQUIREMENTS AND APPLICATION TIMING FOR LAWNS IN THE UPPER MIDWEST

	Nitrogen (N) to apply lbs. N/100 ft²	Timing of applications*
High maintenance lawn		
(Irrigation, clippings removed)	4	May - June, Aug., Sept., Oct. - Nov.
(Irrigation, clippings not removed)	3	May - June, Aug., Oct. - Nov.
Low maintenance lawn		
(No irrigation, clippings removed)	2	Aug., Oct. - Nov.
(No irrigation, clippings not removed)	1	September

** Assume 1 lb. N/100 ft² of a soluble, quick-release N source applied at each application.*

Note: Lower more frequent rates of a quick-release N fertilizer can be used on sandy to sandy loam soil. Slow-release N fertilizers could also be substituted for the quick-release types. Follow manufacturer's and/or extension suggestions for proper application rates.

Source: The authors

The function of turfgrass micronutrients

These small but mighty turf components control important plant functions. Deficiency symptoms are easy to spot.

■ Healthy plant growth depends on the proper amount and interaction of 16 chemical elements. Six of these elements are micronutrients: iron, manganese, zinc, copper, boron, and molybdenum.

Turfgrass can't replace micronutrients on its own, so it's up to the turf manager to be alert to the warning symptoms of deficiency.

- **Iron:** essential for the formation of chlorophyll.
- **Manganese:** absorption of CO_2.
- **Zinc:** improves reproduction capabilities, oxidation.
- **Copper:** activates some enzyme systems.
- **Boron:** for plant reproduction, protein synthesis, cell wall development.
- **Molybdenum:** essential for nitrogen fixation.

Dr. Dave Davidson of Cornell explains that there are three ways to diagnose nutrient deficiency:

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Deficiency symptoms

Iron (Fe)
Symptoms: Intervenal yellowing in new tissues (chlorisis). Blades lose color; necrosis is minimal.
Treatment: 1-2 lbs./acre of iron sulfate; foliar sprays.

Manganese (Mn)
Symptoms: Yellowing or striping between veins along with stunting, curling or spotted leaves. Leaves are very limp.
Treatment: 1-2 lbs./acre of manganese sulfate.

Zinc (Zn)
Symptoms: Dark, thin leaves turning progressively white; yellowing and bronzing of stunted leaves; witches brooms, reduced growth.
Treatment: 0.4-0.8 lbs./acre of zinc sulfate.

Copper (Cu)
Symptoms: Bluish discoloration at the tips of youngest leaves.
Treatment: 0.3-0.5 lbs./acre copper sulfate.

Boron (B)
Symptoms: Growing points develop chlorotic streaks; leaves are stubby and rosette-like in appearance.
Treatment: 0.1-0.3 lbs./acre of boron.

Molybdenum (Mo)
Symptoms: Wilting, stumping and cupping of broad leaves.
Treatment: 0.1 lb./acre of molybdenum. Lime applications improve availability.

Source: "The Turf Managers' Handbook" by Daniel & Freeborg, 1989

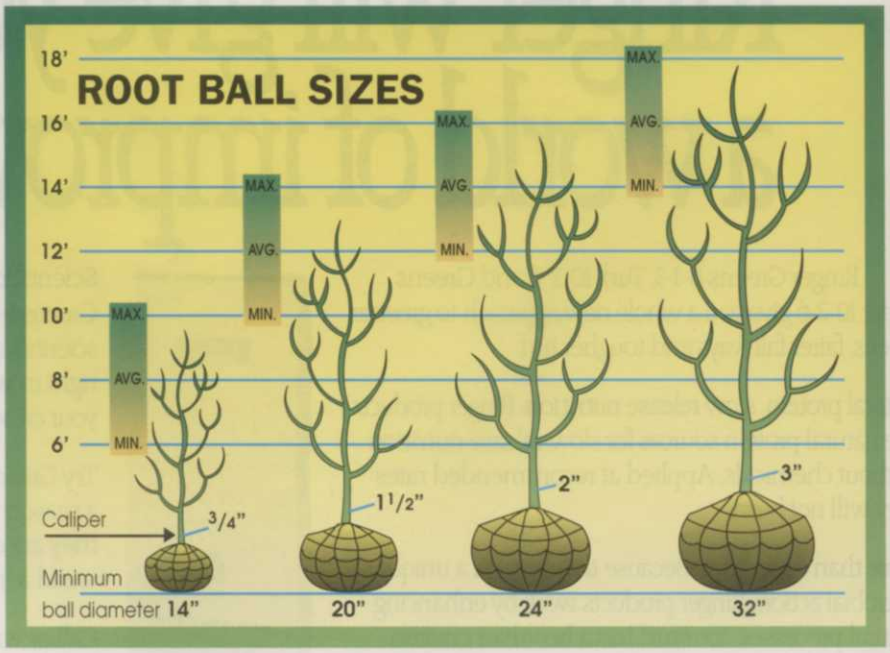
Proper size, proportions, of root balls

■ To reduce transplanting shock and assure that adequate feeding roots are moved with trees purchased from nurseries, the American Association of Nurserymen has established standards for height/diameter relationships and root ball sizes. General rule of thumb for approximating minimum root ball diameter is one foot for each one inch of caliper, according to the AAN.

Please note that caliper is tree trunk diameter, measured at six inches above the ground for trees with a diameter of four inches or less and 12 inches above the ground on larger planting stock. The diameter of larger trees, expressed as "diameter breast height" (DBH), is measured approximately 4-1/2 feet above ground level.

This chart, courtesy of "Tree City USA Bulletin" of the National Arbor Day Foundation, illustrates the AAN standards for most deciduous shade trees.

A more complete range of sizes may be found in "American Standard for Nursery Stock," available for $10. Send check or money order to: AAN, 1250 I St., NW, Suite 500, Washington, DC 20005.



1. Soil testing
2. Tissue testing
3. Plant symptoms

Of those three methods of detection, Davidson says observation of plant symptoms is most reliable.

"There's no really good calibration for soil testing," believes Davidson, "and most state labs are reluctant to make micronutrient recommendations based on soil tests. If private labs (make recommendations), I would question their data base."

Davidson says tissue analyses can be helpful, but they must be done regularly to determine a pattern of deficiency.

"Plant performance," advises Davidson, "will be your best source of information as to whether or not micro- or macronutrients are deficient."

Visual clues to micronutrient deficiency include:

- Lack of vigor; gradual slowing of growth rate.
- Poor response to nitrogen (especially important when you know there are no diseases or pests present).
- Turf adjacent to the affected area is healthy.
- Are symptoms occuring on young or old leaves? According to the "Turf Managers' Handbook," for example, iron deficiency will cause new tissue to develop intervenal yellowing.
- Is the symptom occurring intervenally, uniformly, or is it blotchy?
- Is the plant dying? Watch leaf tips and margins.

Factors influencing nutrient availability include:

—The soil (texture; minerology; fertility; amount of oxygen present).

—Management (fertilizers; pesticides; irrigation; water quality).

—The plant (species and variety; root function).

Davidson predicts the green industry will soon see more sophisticated "quick tests" for turf diagnosis.

The Micronutrient Danger Zone
(parts per million)

Iron : 120 ppm
Copper : 12 ppm
Manganese : 80 ppm
Boron : 8 ppm
Zinc : 50 ppm
Molybdenum : 2

Source: Dr. Dave Davidson, Cornell University

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LAWN CARE INDUSTRY

Lobbyist says to keep those cards and letters (to legislators) coming

PLCAA passes the hat and prepares for Feb. 24-25 'Day on the Hill' pilgrimage to meet with Washington, D.C. legislators.

■ Josephine "Jo" Cooper says the lawn care industry, this past year, finally joined the real world. Got in step. Became part of the process.

She's referring to the political process.

Cooper, a small woman with a soft southern voice, is founder and senior principal of Capitoline International Group, Ltd., an issues management firm located in Washington D.C. It's the lobbying firm that the Professional Lawn Care Association of America (PLCAA) employed to chart its course on Capitol Hill this past year.

"PLCAA decided that rather than simply responding and waiting for things to be done to you, the organization would become very much more active," says Cooper.

Active? Indeed. After Cooper delivered the keynote address at PLCAA's 1991 Convention at Tampa in November, outgoing PLCAA president Neal DeAngelo, like a tent revivalist rattling a collection plate, commanded PLCAA directors to the speaking hall doors to collect the pledges of departing listeners.

There were no other exits.

This level of legislative/regulatory earnestness has characterized PLCAA ever since word got out this past mid-spring that several U.S. Senators had drafted

Josephine Cooper helping PLCAA make some friends on Capitol Hill

national lawn care legislation. PLCAA, which represents about 1,000 lawn care companies, has, since then, been exhorting members to:

1) on one hand, give money to its Federal Issues Management Fund and

2) on the other hand, become acquainted, vocal and—at least—recognizable to their legislators—on all levels.

The national legislation that ignited this flurry is dormant, maybe dead.

The PLCAA exhortations for members' money and time on behalf of legislative matters have only increased, though. These calls literally rose to a wail with the June 1991 ruling by the U.S. Supreme Court that any of the nation's 80,000 political subdivisions can—if they don't conflict with federal or state laws—draft their own pesticide use regulations.

Cooper says PLCAA is on the right track by demonstrating to legislators that it's not inflexible, that it accepts "reasonable regulation" and sensibly drafted notification and right-to-know laws.

She also makes these points about today's legislative/regulatory climate:

- The U.S. Environmental Protection Agency is unloved and untrusted by just about everyone and will increasingly see its mandate as more regulations and increased enforcement.
- The media will intensify its coverage of environmental issues. "Most of the reporters involved with environmental issues are not so much objective journalists anymore as they are advocates," says Cooper.
- The environmental activist community, and much of the public, is convinced some of the products on the market shouldn't be there. They wouldn't be available, these critics feel, if the EPA did its job properly.
- Most legislators don't know very much about the lawn care industry nor, probably, about pesticides. "We found that some very limited anecdotal situations, specific situations, formed the legislation that had been drafted, were driving that legislation," says Cooper.

With 23 years experience in environmental matters, some of it with the EPA and as a staffer on Capitol Hill, Cooper says that she's convinced that calls and letters from constituents to legislators do sway legislative opinion.

She also urges PLCAA members to participate in its "Day on the Hill" activities in Washington, D.C. Feb. 24-25.

—Ron Hall

ELSEWHERE

Determining customer wants, p. 40

Competition grows in the 1990s, p. 40

O.M. Scott enters recycling race, p. 42

Video training in Maryland, p. 42

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Determining customer wants

Do your front-line people spend 'quality time' on clients' lawns? That's one of the services most customers want.

■ It's no secret what your customers want, says Gary Clayton of Sandoz Agro North America Inc. It's how you *deal* with customer wants-and-needs that makes your company a success or a failure.

"You can't truly separate wants-and-needs and customer satisfaction," says Clayton, a 12-year green industry veteran. "So satisfying customers should be integrated into a company philosophy or mission statement."

Clayton says, historically, research has proven that customers in the green industry want:

- a green, healthy lawn,
- treated by a trained, informative company
- at a competitive price
- offering additional or full services
- implementing current technology.

"You must commit to develop a strategy," Clayton says. "And it must be a full-time effort. You also need a system to measure customer satisfaction."

Gary Clayton: front-line people are best resources

Too many times, lawn/landscape services concentrate on the target, or product: a green, healthy lawn. But what's expected by the customer is *more* than that, Clayton says: materials, good service and company responsibility. What's *possible* is another factor in the customer satisfaction arena: unusual actions of service, demonstrations of concern, and civic support.

"We have to generate that wide-scope focus," says Clayton. "Typical wants-and-needs are timely applications, by the same technician, professional application, respect of personal property, professional appearance and attitudes, leave-behind notes and guides, and spending time on the property."

However, to go that one step further, says Clayton, businesses that are really in tune with the customer add these personal *exceptional* services:

- notes detailing special problems;
- information in the mail or a telephone follow-up;
- helpful office staff;
- service visits without requests;
- immediate response to problems;
- exceptionally courteous front-liners;
- inspection and evaluation of the entire property;
- spending "quality time" with the customer; and
- a "sixth sense" of what the customer wants-and-needs.

There exist plenty of opportunities to determine customer wants-and-needs, too, says Clayton. These include point of sales, each application, each phone contact and/or a customer survey form.

"We're at a point in our industry where we have to get back to the basics," Clayton notes. "When you grow, you have to determine whether it's attributed to the sales and marketing function, or whether it's because you've (accurately) determined customer wants-and-needs.

"The bottom line in growth is how we communicate with our customer."

—Jerry Roche

More competition, fewer entry-level prospects through the 90s

■ Meet Mr. Middle Management. His large corporation is downsizing. Pretty soon he will be out of work.

Don't pity Mr. MM. He won't be idle for long.

In fact, he might become the newest competitor to your lawn or landscape service business.

Two of every three former corporate climbers re-enter the job market on the *small business* side of the equation, says Gerald Sweda, the corporate training manager for O.M. Scott & Sons, Marysville, Ohio.

"The playing field is changing," says Sweda. "The rules of the game are changing." And many of these rule changes impact the growing importance of small business—which is both proliferating and failing at an astonishing rate—in America's economic picture.

Explains Sweda:

- Big business is dropping middle managers at record levels (over 2 million let go during the 1980s, and the pace is accelerating.) Many of these former professionals are fed up with the commute, they're fed up with downtown parking, they want to be their own bosses.
- The pool of basically unskilled workers is falling in relation to the industries needing them—in 1990 4.5 million fewer entry-level candidates than in 1980.

This translates into more entrepreneurs, would-be entrepreneurs and potential competitors, but fewer people willing to go out and actually do the labor.

"Small business has to learn some things from big business," says Sweda, but foremost, it has to learn how to compete. The days of trading customers with several friendly competitors, or running a classified ad and attracting reliable hourly workers, is becoming just a warm and fuzzy memory to lawn and landscape care providers in many markets, says Sweda.

Gerald Sweda: small businesses need more sophistication

Small business operators are going to have to become as sophisticated as big business in the operation of their companies, he maintains.

Says Sweda, one of every six small businesses will fail in 1992, and, of the survivors, most can expect to lose almost 1/3rd of their customers each year.

"Suddenly customers are consciously aware of this service thing. We've made it such an issue that it's on everybody's lips now and every customer wants service," says Sweda.

"If you don't respond, they (customers) simply leave."

—Ron Hall

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TSS-1-0

O.M. Scott bidding to be top player in municipal yard-waste recycling

■ Green industry professionals will benefit from O.M. Scott & Sons Company's drive to be the nation's municipal yard-waste recycling leader.

That company opened its 11th yard waste facility in mid-October, this one at its company headquarters in Marysville, Ohio. This site, like the others, is accepting lawn and landscape wastes. The disposal costs are significantly cheaper than at landfills, assuming the landfills still accept such material, claims a company official.

Other Scotts' sites are located in California, Texas, Pennsylvania, Georgia, Alabama, South Carolina and Virginia.

The newest Ohio site, nearly 22 acres, will process 50,000 tons of Franklin County grass clippings, leaves and brush each year. That's about one quarter of all yard wastes in the metropolitan Columbus area.

This particular facility is operated under contract to the Franklin County Regional Solid Waste Management Authority.

Here's how it works: yard waste from golf courses, city and village work crews, landscapers, tree companies, utility companies and lawn care professionals is taken to one of five transfer sites. Then the regional authority transports the wastes from these collection areas to the Scotts' site.

The Wildcat Turner allows air to circulate through developing compost at the Scotts/Hyponex site in central Ohio.

At other compost locations, the material—either loose or in recyclable paper bags—is brought directly to the site.

"We are totally recycling this material," George Martin, manager of composting for Scotts/Hyponex, tells LANDSCAPE MANAGEMENT magazine. "We're taking something that was previously considered waste and disposed of in landfills, and we're recycling it and using it."

Scott's uses the compost resulting from the recycling operations as an ingredient in its Hyponex soil conditioners and top soils, says Martin. In addition to Hyponex bag products, the company also did about $7 million in bulk compost sales. (Overall, the Hyponex organic product line reportedly accounted for about $130 million of O.M Scott & Sons' $380 million in sales last year.

Martin says ever-tightening landfill regulations are driving the yard-waste/compo issue Concurrently, some communitie that had started composting services ar discovering that they haven't the mone nor the expertise to operate them. They' looking to private industry for help.

Backyard composting by homeowne may grow, but it's unlikely—because the effort required to do it correctly—to become widespread, believes Martin and other compost authorities.

Martin says green industry professionals benefit from the Scotts/Hyponex facilities because yard wastes can be disposed of there far more cheaply than at landfills.

—Ron Hall

Maryland offers video training

■ Money can't buy happiness, but $120 can buy a pretty good start on your pesticide applicator training program.

That's the cost of a six-part video series that businesses can use to help train non-certified employees who handle and apply pesticides. The Cooperative Extension Service, Maryland Institute for Agriculture and Natural Resources, is offering the series which was funded in part by a $30,000 grant from the U.S. Environmental Protection Agency.

"We developed this series in response to the needs of employers," says Amy E. Brown, Extension pesticide education coordinator. "The videos offer a convenient, inexpensive alternative to developing and conducting a training seminar every time new workers are hired."

Topics covered include:

Module 1: Pesticide Laws and Regulations.

Module 2: The Pesticide Label.

Module 3: Protecting the Pesticide Handler.

Module 4: Guidelines for Proper Pesticide Handling.

Module 5: Pesticides and the Environment.

Module 6: Integrated Pest Management.

The series includes on-screen tests and comes with printed discussion guides and sets of questions and answers to help employers insure that their employees understand essential information.

Contact: Amy E. Brown at (301) 405-3928. To order, send a check or money order payable to the University of Maryland, c/o Video Resource Center, 0120 Symons Hall, College Park, MD 20742.

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☐ **A tank-mix of Embark 2.S and Ferromec® Liquid Iron can reduce the mowing of warm season grasses like centipede and St. Augustine by more than 50% for six to seven weeks for only $45 per acre. (Of course, bermuda costs more, but mowing it also costs more.)**

There is nothing on the scene today that more efficiently slows down the growth of turf, thus reducing mowing time, than Embark (mefluidide). How timely, given the current landfill situation. Turf quality needn't be compromised, thanks to a new fine-turf formulation, tank-mixtures, and specific directions for ornamental turf use.

Embark is foliarly absorbed and directs the life energy of the plant away from the development of seedheads and stem elongation, which means that the plant's root mass is not used up in support of excessive topgrowth. Interestingly, when untreated grasses may begin to show the effects of excessive heat and drought, Embark-treated grass actually enjoys a rebound of life for a couple of weeks from the energy that was stored up in the roots.

Embark Lite is the mefluidide formulation especially designed for fine turf. Limit is amidochlor, a root-absorbed PGR which is also a PBI/Gordon product. When tank-mixed with Embark Lite, the Limit helps deliver the maximum duration of growth suppression.

There is almost no end to the creative things you can do with the various formulations of Embark and tank mixes that are available.

Many of these uses are detailed in our PGR Applicator Guide, which we want to send you. It is a road map to efficiency in the management of ornamental turf that can help you meet today's challenge when 85% of the commercial property owners and managers report that they will be seeking competitive bids on their landscape management contracts this season.

It also contains many management suggestions for using Embark, such as:

- **How to guard against discoloration in PGR-treated turf**
- **How to be compensated for *not* mowing the grass**
- **Recommended mowing practices for beauty enhancement of PGR-treated turf**
- **How to use Embark to hasten overseeding establishment or to coax the dominance of one grass species over another**
- **How to use Embark to dramatically reduce the need for trimming and/or edging**
- **How to use Embark to suppress seedhead development of Poa annua**

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This 24-page PGR Applicator Guide is your road map to efficiency in the mowing and management of ornamental turf. Write to us for your complimentary copy.

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HOT TOPICS

Pesticide regulation 'partnership' lauded

WASHINGTON—H.R. 3850 is the "Federal and State Pesticide Regulation Partnership Act of 1991." If passed, it would prohibit local regulation of pesticides.

Congressmen Charles Hatcher (D-Ga.) and Ron Marlenee (R-Mont.) introduced the bill to the U.S. House of Representatives on Nov. 22. By month's end, 28 other members of the House Agriculture Committee had also signed on.

The bill is supported by most segments of the green industry, specifically by The Coalition for Sensible Pesticide Policy, a group of almost 160 state, regional and national trade associations whose members support uniformity of pesticide regulation.

Notes Warren Stickle, president of the Chemical Producers and Distributors Association (CPDA):

"Cong. Hatcher and the other sponsors have demonstrated their commitment to securing a uniform system of pesticide regulation which will insure that the American public continues to enjoy the benefits of tested and effective pesticide products.

"This legislation will offer protection against the crippling consequences which would ensue if a patchwork of confusing and often conflicting pesticide regulations is allowed to proliferate unchecked nationwide."

Stickle notes that H.R. 3850 addresses the June, 1991 Supreme Court decision in the case of *Wisconsin Public Intervenor v. Mortier*.

Allen James is executive director for Responsible Industry for a Sound Environment (RISE), which also supports H.R. 3850. He tells LM readers: "Congress has adjourned until Jan. 20, (so) you may wish to contact your congressman now to urge action on this bill."

A BRIEF HISTORY OF THE WISCONSIN CONTROVERSY

1981
Town of Casey, Wisc. prohibits pesticide use on public lands and highways

1984
Casey modifies its law to include private lands open to public use, and aerial applications

1988
U.S. Circuit Court of Appeals voids Casey law

1990
Circuit Court of Appeals decision upheld by Wisconsin Supreme Court

1991
APRIL: U.S. Supreme Court hears *Wisconsin Public Intervenor vs. Mortier*
MAY: Green industry interests campaign in Washington, D.C. for practical pesticide regulations before a Senate subcommittee
JUNE: U.S. Supreme Court overturns Wisconsin decision; rules localities can regulate pesticides

Texas homeowners to hear ET reports

COLLEGE STATION, Texas—Tune into the TV weather report in certain Texas cities this summer and jot down today's ET as you review the liklihood of the next rain.

ET? What the devil is that?

ET is short for evapotranspiration, the combined loss of water by evaporation from the soil surface and by transpiration from plants. In this case we're talking about turfgrass plants.

Texas A&M turfgrass expert Dr. William Knoop thinks many homeowners will be glad to get a daily ET report because it will help them know when to water their lawns.

The daily ET report will be part of the Texas extension service's experimental Water Smart program.

"We feel most people overwater their lawns," says Knoop. "A lot of the folks in Texas have moved down from the North and don't understand bermudagrass. They tend to water it like Kentucky bluegrass."

The Water Smart program follows in the footsteps and complements Knoop's and the extension service's enormously successful "Don't Bag It" program to discourage homeowners from bagging and dumping grass clippings into community landfills.

In 1991, more than 100 Texas cities participated in "Don't Bag It." And, with grants exceeding $100,000, Knoop says "there's not going to be a town in Texas that doesn't learn about 'Don't Bag It'."

Texas may be big, real big, but the state also has over 800 extension agents scattered among its 252 counties. Even so, educating the public about ET may not be as easy as convincing it that landfills are no place for grass and leaves.

ELSEWHERE

Students look at chemicals, page 52

Unwatered lawns result in fires, page 52

Group certifies hort pros, page 55

Too much tall fescue, page 55

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Finally, a scientific look at chemicals by U.S. students?

BERKELEY, Calif.—Mr. Professional Applicator, you're not the only person troubled about how grade school students view the role of chemicals in today's society.

Many others, it turns out, are similarly concerned judging by the growth of the Chemical Education for Public Understanding Program (CEPUP).

CEPUP, headquartered at the University of California, Berkeley, develops and offers supplemental science programs for grade school students. One of its primary focuses is to educate students about chemicals.

Last year it reached almost 600,000 students in 40 states, says its director Herbert Thier, Ed.D.

"Citizenship requires an understanding of science," says Thier. "It is absolutely a requirement to participate in a democratic society in an effective way."

Thier explains that CEPUP, presented in hands-on packages of information, hammers away at the process of scientific inquiry. Ultimately, it presents the concepts of risks and benefits.

"An understanding about chemicals and how chemicals interact with people and the environment is essential to an informed citizenship in our society," adds Thier. "It is not productive to have people react only on an emotional basis."

So far, CEPUP has developed supplemental science programs for students from the fifth to the ninth grades. It also sponsors several community education programs dealing with chemicals and chemical use.

Funding for CEPUP is provided by the National Science Foundation and private industry.

"You (professional applicators) are seen by some people in your communities as someone who wants to spread poison," adds Thier. "Obviously, there is an educational problem here."

For more information contact: CEPUP, Lawrence Hall of Science, Univ. of California, Berkeley, CA 94720; (510) 642-8718.

Herbert Thier says students can't become good citizens without a basic knowledge of science.

Dry California lawns contribute to fire losses, say Beard and Fender

ROLLING MEADOWS, Ill.—Reduced outdoor watering and smaller sized lawns contributed to the overall devastation caused by the fires in Oakland and Berkeley, Calif., according to Dr. James Beard of Texas A&M University.

"When the fires began, they were fueled by dry landscape plants, many of which replaced turfgrass because they were viewed as water-saving," says Beard.

"Turfgrasses are about 70 to 80 percent water by weight, and even a moderately maintained lawn can serve as a fire barrier. The loss of lives and property is tragic, but it should now be obvious that Californians and others need to take a close and careful look at the benefits turfgrass can provide," Beard observes.

Douglas Fender, executive director of the American Sod Producers Association here, adds:

"Too often, turfgrass is viewed as an aesthetic feature of the landscape, not as the practical environmental tool it really is. The benefits of grass far outweigh their water requirements, especially when people learn how to properly care for their lawns."

Beard is a turfgrass researcher with nearly 30 years experience.

"(Turfgrasses) aren't the useless, wasteful water-hogs some people say they are," he concludes. "They can, in fact, save lives, with minimal amounts of supplemental water."

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NEXT MONTH:

LM Reports: Irrigation equipment
Preparing golf courses for special events
Selecting hand sprayers
Spring fertilization tactics
Renovating athletic fields
Dealing with the public and media
Soil testing and its benefits

Fescue, blue, *Poa trivialis* make news

PACIFIC NORTHWEST—Seed experts in Idaho, Oregon and Washington predict a sizeable cutback in 1992's turf-type tall fescue production, to remedy a glut in the species.

Gayle Jacklin, director of marketing for the Jacklin Seed Co., says inventories of turf-type tall fescue might not reach "acceptable levels" until 1993.

Dave Nelson

Dave Nelson of the Oregon Fine Fescue Commission estimates that about 30,000 to 50,000 tall fescue acres will be converted to wheat production, which represents a decrease of 10 to 15 percent.

Dr. Jerry Pepin

"We overproduced it," admits Dr. Jerry Pepin of Pickseed West.

"Five years ago there weren't even 25,000 acres in production," says Pepin. He agrees that it will take at least one season to correct the situation.

"We concentrated so heavily for the last 10 years on turf-type tall fescue, and it grew to more than 80,000 acres," says Nelson.

At the other end of the spectrum, Nelson says bluegrass prices have risen in price due to inadequate supply.

"The dryland areas in southeastern Washington did not yield what was hoped for," says Nelson, resulting in a price increase at season's end.

"(The price of) common Kentucky bluegrass has gone up about 25 to 30 percent," says Doug Toews, director of marketing for International Seeds. "And as far as name brand proprietary varieties, they're stable and/or going up."

Compounding the problem is the increased price of wheat.

"When wheat prices jump up like they did—from between $2.75 and $4 a bushel—it gives farmers an alternative to back some ground out of grass seed production," Nelson explains.

Nelson says the bluegrass price increase should raise the price of other varieties.

In other seed news, *Poa trivialis* overseeding is becoming more popular on southern golf greens.

"This gives us an opportunity to diversify the production base," says Nelson.

"It's going to be a hot one, but in limited supply for the next two or three years," says Toews of *Poa trivialis*'s growing popularity, which is reportedly due to better shade tolerance, and because the poa is easier to transition out in the spring than a straight perennial ryegrass overseed.

—Terry McIver

HOT STUFF

Group to certify hort pros

DENVER — A group with the acronym ARCPACS will soon be the official certification board for horticultural professionals, according to its chairperson.

ARCPACS stands for the American Registry of Certified Professionals in Agronomy, Crops and Soils. It has been in existence for more than 14 years.

In preparation for its new duties, ARCPACS added a six-member sub-board of horticulturists during its annual meeting here in October. The board now has subboards in horticulture, agronomy, crop and soil science.

The six new board members, according to ARCPACS chairman Dr. Ricks Pluenneke, are: Dr. J. Benton Storey of Texas A&M University, Dr. William L. Hagan of San Leandro, Calif.; Dr. Cyntia D. Fellman of Frank's Nursery and Crafts, Detroit, Mich.; Dr. George Fitzpatrick of the University of Florida; Dr. Terry G. I Ferriss of the University of Wisconsin/River Falls; and Dr. James S. Kamas of the Cornell University Cooperative Extension Service.

Another neem on market in 1992

NEW YORK—Another natural insecticide will be on the market by the 1992 growing season, according to a recent report in the *New York Times*.

The product is an extract of seeds from the neem tree, a tropical mahogany.

W.R. Grace, which developed the product, will sell a patented concentrate as "Margosan-O" to the professional horticulture market, the *Times* reports.

"Greenhouse and field tests have shown that (the) liquid spray, applied to plant leaves, controls about 170 types of insect pests, including beetles, caterpillars, fruit flies, crickets, locusts, aphids, weevils, gypsy moths and mosquitos," the *Times* article notes.

There may be turf and forestry applications, the article also says. A relatively short residual, though, may mean several applications during the growing season.

Jacklins might acquire Medalist

POST FALLS, Idaho—The Jacklin brothers—Don, Doyle and Duane—have issued a letter of intent to acquire the Medalist Turf Seed Division of Northrup King Lawn & Garden Company. The buy would be made independent of the Jacklin Seed Co., and includes Medalist's varieties, sales staff, and its Oregon and Nevada branch operations.

The Medalist Division would be renamed Medalist America and would operate independently, supplying grass seed to its existing professional and dealer network.

The purchase would give the Jacklins an entry into the consumer market with smaller, retail packaging. Northrup would benefit from the Jacklins' reputation as leaders in seed research.

Andrea Mackin, Jacklin spokesperson, says Medalist America would retain a separate sales and marketing staff, and its center of operations would remain in Minneapolis.

Jacklin would also acquire use of Medalist's Oregon research facility.

GREEN INDUSTRY EVENTS

JANUARY

13-16: Virginia Turf and Landscape Conference, Richmond Centre. Contact: Virginia Turfgrass Council, P.O. Box 9528, Virginia Beach, VA 23450; (804) 340-3473.

16-18: Mid-Am Horticultural Trade Show, Hyatt Regency Hotel, Chicago, Ill. Contact: The Mid-Am Trade Show, 1000 N. Rand Rd., Suite 214, Wauconda, IL 60084; (708) 526-2010.

17: Western Tree Management Symposium, Los Angeles State & County Arboretum, Arcadia, Calif. Contact: Al Epperson, 7072 Thomas St., Buena Park, CA 90621; (714) 836-8989 or Tommy Caldwell, (213) 666-6157.

19-21: Empire State Tree Conference, Holiday Inn, Albany, N.Y. Contact: New York State Arborists, ISA Chapter, P.O. Box 58, Latham, NY 12110; (518) 783-1322.

20-22: Michigan Turfgrass Conference; Holiday Inn (formerly Clarion) Convention Center, Lansing, Mich. Contact: MSU Cooperative Extension Service, Plant and Soil Sciences Building, East Lansing, MI 48824-1325.

23-25: Tropical Plant Industry Exposition (TPIE), Ft. Lauderdale Convention Center. Contact: Florida Nurserymen and Growers Assn., 5401 Kirkman Rd., Suite 650, Orlando, FL 32819; (407) 345-8137.

26-29: Associated Landscape Contractors of America Executive Forum, Naples, Fla. Contact: ALCA, 405 N. Washington St., Suite 104, Falls Church, VA 22046; (800) 395-2522; in Virginia, call (703) 241-4004.

27-28: Arkansas Turfgrass Association Conference and Trade Show, Arkansas Statehouse Convention Center. Contact: Angie McSwain, (501) 663-8810; or Arkansas Turfgrass Association, Penthouse Suite, 1123 S. University, Little Rock, AR 72204.

27-31: Virginia Tech's Turfgrass Ecology and Management Short Course, Donaldson Brown Center for Continuing Ed., Virginia Tech campus. Contact: Conference Registrar, Donaldson Brown Center, Virginia Tech, Blacksburg, VA 24061; (703) 231-5182.

28: Landscape Irrigation System Design, University of California at Davis. Contact: (800) 752-0881.

29-30: Northern California Turf and Landscape Exposition, Santa Clara Convention Center. Contact: NCTC, 425 Oak St., Brentwood, CA 94513; (415) 516-0146.

29-30: Interstate Pest Control Conference, University of Maryland, College Park, Md. Contact: N.L. Breisch, Symons Hall, College Park, MD 20742-5575; (301) 405-3913.

30: Connecticut Tree Protective Association annual meeting, Aqua-Turf, Plantsville, Conn. Contact: CTPA, 18 Washington St., Rocky Hill, CT 06067-1527; (203) 257-8971.

FEBRUARY

3-5: Mid-America Green Industry Convention, Hilton Plaza Inn, Kansas City, Mo. Contact: Olivia Golden, executive director, PLCAMA, P.O. Box 35184, Kansas City, MO 64134; (816) 765-7616.

4-14: Target Specialty Products seminars, Fresno, Calif.; San Jose, Calif.; Phoenix, Ariz.; Buena Park, Calif. Contact Target for specific dates and locations: (310) 865-9541.

5-7: American Sod Producers Association Midwinter Conference and Exposition, Bally's Casino & Resort, Las Vegas, Nev. Contact: ASPA, 1855 Hicks Rd., Rolling Meadows, IL 60008. (708) 705-9898.

CUSTOMER SERVICE TIPS

by Ed Wandtke

■ Feedback on the effectiveness of your company's customer service is essential to maintain or improve service quality. Some companies provide each of their employees with a pocket diary for the year. Employees are asked to write daily answers to the following three questions:

1. What customer service did I perform today?

2. What were the results of the customer service I performed?

3. What customer service idea or observation do I have for this day?

Start with a weekly meeting, then switch to monthly diary reviews with your office assistants, technicians and supervisors. The results of the meetings should provide you with insight into problems and revelations about employee and lawn service customer trends, patterns and preferences.

Asking employees to keep a diary can be used in delegating responsibility and in developing their ability to solve problems on their own.

It also serves as a source of information on how an individual handled an out-of-the-ordinary lawn service customer problem. Compiling problems and solutions each month for unique occurrences is a way to recognize individual creativity and develop problem solving skills. Negative solutions or decisions should not be published.

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INFO CENTER

Useful literature and videos offered to LM readers

STORAGE REGULATIONS— An informative videotape describing significant codes and standards which regulate the storage of hazardous materials is available from the Haz-Stor Co. Based on a paper presented by the company at the 1991 NFPA Conference, the video is an easy-to-understand summary of the interaction between federal, state and local regulations. For more information, contact Haz-Stor at 2454 Dempster St., Des Plaines, IL 60016; (708) 294-1000.

CHAIN SAW VIDEOS—Two videos, "Chain Saw Use and Safety" and "Chain Saw Selection and Maintenance," are being offered by the National Arborist Association. For more info, contact the NAA at P.O. Box 1094, Amherst, NH 03031; (800) 733-2622.

ON LAWN AERATION—Prego Press offers a 200-page, large format book "Lawn Aeration: Turn Hard Soil into Cold Cash," on sale until March 1 for $25. At that time, the price becomes $35. Author Robin Pedrotti has his own lawn aeration business. To order, send the money to Prego Press, Dept. R, P.O. Box 23945, San Diego, CA 92193. For overnight delivery, include an additional $10 per book.

ARCHITECTS LISTED—The American Society of Golf Course Architects has published a 120-page directory featuring valuable information on each of its 111 associate and regular members. To receive a copy, send a check for $5 to: ASGCA, 221 N. LaSalle St., Chicago, IL 60601.

LITERATURE FROM PPGA— The Professional Plant Growers Association has two publications and one video of interest to the green industry. If you are on the look-out for new suppliers of bedding and pot plants for landscape design, you'll want the free PPGA's Buyer's Guide. "Success with Bedding Plants" is a 20-minute video ideal for landscapers, park directors, golf course supers, etc. Topics include soil preparation, plant selection and installation, and care and maintenance. Price is $132.50 for non-members, $102 for PPGA members. Also, a "Professional Guide to Flowering Annuals" is available for $2.60 each. It is a full-color, 28-page booklet with a list and photos of 63 popular flowering annuals. To order, or for more information, write P.O. Box 27517, Lansing, MI 48909 or phone (517) 694-7700.

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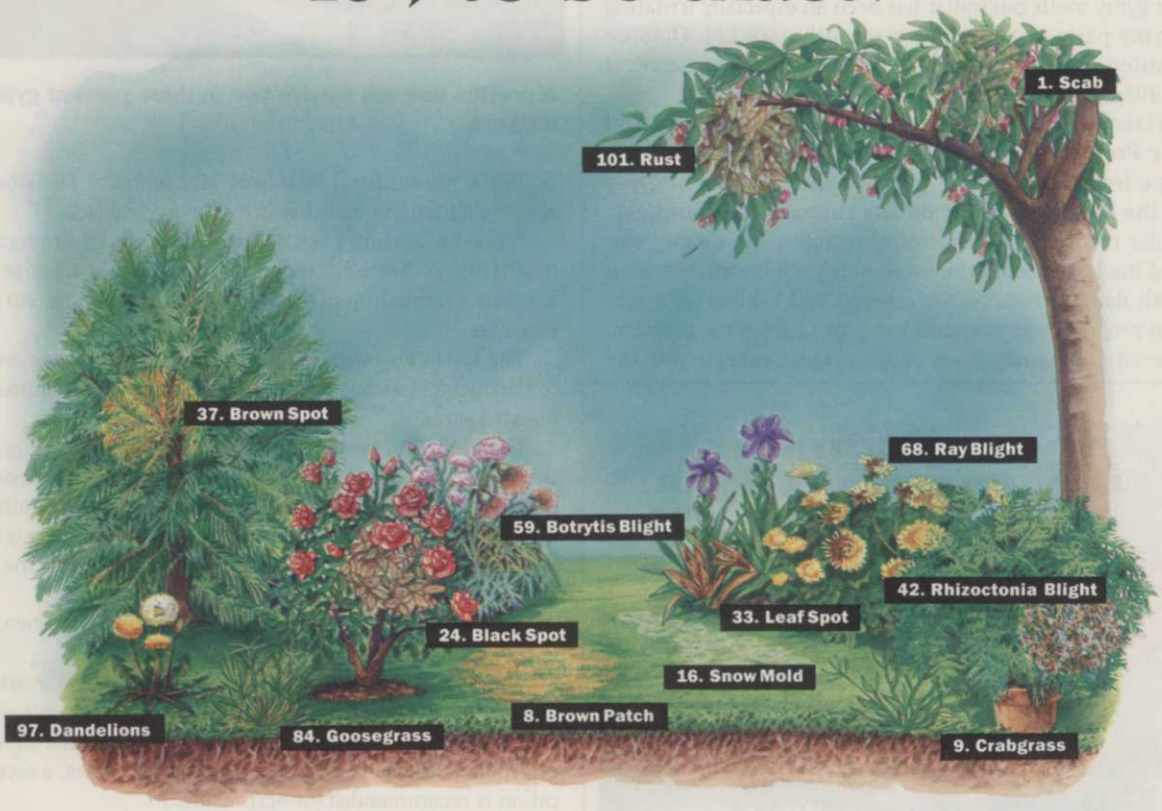

Professionals count on the Turf Care Pros. To treat diseases, Daconil 2787® is the cornerstone of your management program. The broadest-spectrum fungicide on the market, it controls 12 major turf and the major ornamental diseases. And there's never been a documented case of disease resistance to Daconil 2787.

For pre- and postemergent herbicide control of annual grasses and broadleaf weeds, it's Dacthal® and Daconate 6.® On pesky broadleaf weeds, use 2 Plus 2.

Always follow label directions carefully when using turf chemicals.

* Roundup is a registered trademark of Monsanto Company.

And round out your program using Frigate® with Roundup* to control perennial and annual weeds. Together with Daconil, they all create a complete professional management program.

When it comes to turf and ornamental care, count on the Turf Care Pros. And count out diseases and weeds — 104 to be exact.

ISK Biotech Corporation, Turf & Specialty Products Division, 5966 Heisley Road, P.O. Box 8000, Mentor, OH 44061-8000.

Circle No. 111 on Reader Inquiry Card

JOB TALK

Aerial bio-attack slays gypsy moth

■ The gypsy moth caterpillar has been an especially irritating pest in many parts of the country recently (see LM, October 1991), causing horticulturists to experiment with new control methods, including biological pesticides.

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) reacted quickly when a 1988 pheromone trapping program indicated the presence of gypsy moths in the Door County region and surrounding counties.

A popular recreational and forestry region, Door County officials feared the loss of tourist revenue which it felt would result if gypsy moth damage became widespread and evident. A major eradication program was launched last year to solve the problem, led by Steven C. Krause, gypsy moth project coordinator the

A healthy tree will survive two to three years of gypsy moth damage.

DATCP's Agricultural Resource Management Division. Krause says the situation nearly became unmanageable.

"Had no action been taken this year to eradicate gypsy moths," says Krause, "we most likely would have seen a permanent establishment in Door County and the surrounding counties."

The USDA Forestry Service teamed with the state and decided to conduct a biopesticide spraying program on an estimated 6,000 infested acres.

The biological pesticide chosen was the *Bacillus thuringiensis var. kurstaki (B.t.k.)*, a biological stomach poison that only affects certain lepidopteran larvae, which include gypsy moth caterpillars. The spores and crystals of the agent are ingested by lepidopteran caterpillars, which results in paralysis of the gut wall, and death within hours.

State officials chose the Foray 48B product, by Novo Nordisk's Plant Protection Division in Danbury, Conn.

The 6,000 acres were treated twice, three days apart by aerial application from two twin-engine aircraft. Treatments were timed to hit just after eggs had hatched, to be injested by emerging caterpillars. (Because eggs hatch at different rates, a second application is recommended for best results.)

The aerial application firm, Duflo Spray-Chemical, Inc., of New Bremen, N.Y., was awarded the application contract. Owner Jeffrey Duflo was on site to manage the spraying efforts, and manufacturer's personnel were on hand to provide field support to Duflo's team.

Observers from DATPC and the USDA Forest Service insured adherence to project specifications and environmental regulations.

Krause says he is confident in the efficacy of the B.t.k. pesticides to eradicate the gypsy moth, "in this economically vital region of Wisconsin."

The state ag department continues its program to monitor other areas of Wisconsin to determine if there will be a need to conduct eradication programs in untreated regions next year.

State officials say they have learned from this experience that gypsy moth is a pest to be dealt with in a swift and firm manner. Gypsy moth is spread through the movement of household goods and forest products, as well as by campers and others who travel from infested to non-infested areas.

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Circle No. 108 on Reader Inquiry Card

BOOKSTORE

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An excellent reference for individuals involved in the design and development of plantings and constructed features for residential sites. Illustrations and actual residential case study examples are used to communicate graphic, planning and design concepts which are the focus of this text. **$55.95**

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by Shurtleff, Fermanian, Randell
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235 - LAWN CARE: A HANDBOOK FOR PROFESSIONALS
by H. Decker, J. Decker
Written by turfgrass professionals, this handy guide will be invaluable for playing field managers, golf course managers, or any lawn care practitioner. Covers all aspects of turfgrass management. **$48.95**

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by James Watkins
A guidebook for engineers, architects, designers and contractors. Keeps pace with the latest developments in turf and landscape irrigation. Specific chapters devoted to rotary sprinkler design systems. Golf course design systems and expanded engineering and reference material. **$29.90**

615 - TURF MANAGEMENT FOR GOLF COURSES
by James Beard
Written by an eminent turfgrass researcher, this USGA sponsored text is an ideal reference and "how to" guide. Details all phases of golf course design and construction, turf management, course administration, irrigation, equipment and disease and pest control. Fully illustrated. **$74.00**

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by Pascal Pirone
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by Howard Sprague
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by A.J. Turgeon
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by James Beard
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by Daniel and Freeborg
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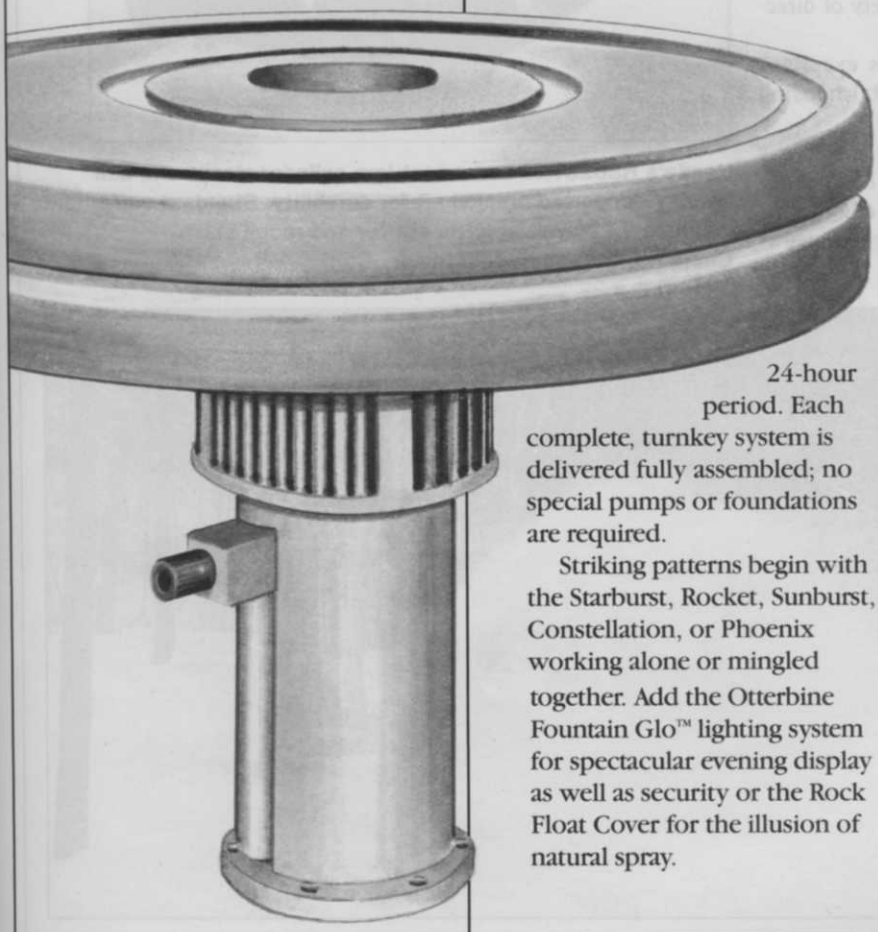

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Please see Otterbine Booth #2209 at the GCSAA show

Circle No. 116 on Reader Inquiry Card

Two for the snow: to help clear your way through the toughest winter conditions

Honda and Jacobsen—though two distinctly different companies—do have one thing in common: they like to move snow, and have the equipment to do it.

Two models recently introduced by the companies—one an attachment, the other a walk-behind—promise much in the way of snow removal.

From Honda comes the self-propelled, two-stage HS828TAS snowblower, now with a hydrostatic drive system.

The hydrostatic drive—which Honda says it pioneered for snowblowers—gives the unit many variable speeds for any type of snow condition. Controls are conveniently located and easy to use. One-hand operation with integrated drive and auger clutch controls leaves the other hand free to make discharge chute and speed adjustments.

The engine features a cast iron cylinder sleeve and ball bearing-supported crankshaft for durability. Standard equipment includes a 120-volt electric starter and recoil start.

Two-way adjustable discharge chutes with a 210-degree discharge radius allow the operator to choose a variety of directions for discharging snow.

The HS828TAS's dual track drive provides excellent traction, and a new serrated auger with all-metal housing cuts right through the hard-packed snow.

The auger clutch system allows the operator to stop the auger after releasing the clutch lever. Powered by an eight horsepower Honda four-stroke OHV commercial engine, the snow blower will clear a 28-inch wide path and throw snow as far as 49 feet.

Honda's HS828TAS has a cast iron cylinder sleeve and ball bearing supported crankshaft for durability. Standard equipment includes a 120-volt electric starter and recoil start.
Circle No. 190 on Reader Inquiry Card

Jacobsen Division of Textron snow throwers attach to the Jacobsen Turfcats or G-4x4 Plus, ST-5111 and HR-5111.

Turfcat attachments cut a 51-inch swath. The rated capacity is 120 tons/hour. Hydraulic or mechanical drive are available. Auger diameter is 14-inches.

The G-4x4 Plus, ST-5111 and HR-5111 attachment cuts through 63-inch wide snow trails, and is also rated at 120-tons/hour. Two drives—hydraulic or mechanical—are also available.

All Jacobsen snow throwers have a quick-hitch system that allows implements to be changed in a matter of minutes with no tools.

Each has a two-stage design, and a 10-gauge steel housing reinforced at the wear and stress points.

The auger does not extend beyond the housing.

Jacobsen Turfcat attachments cut a 51-inch swath. Rated capacity is 120 tons/hour.
Circle No. 191 on Reader Inquiry Card

The fight against yellow nutsedge begins here.

Only Basagran® T/O ends it here.

Unlike other herbicides which only burn back yellow nutsedge above the surface, Basagran T/O herbicide travels down to control the roots, rhizomes and tuber network underground. It's the only way to be sure those same weeds won't come back.

An over-the-top application is all it takes to win the fight against yellow nutsedge and broadleaf weeds. (A second application is recommended when regrowth occurs.) And while it's tough on weeds, it's easy on virtually all varieties of established turf.

Basagran T/O is also labeled for directed sprays in ornamental varieties.

For more information on how to control yellow nutsedge and broadleaf weeds with Basagran T/O, call **Toll Free 1-800-878-8060.**

Always read and follow label directions.
Basagran is a registered trademark of BASF AG.
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BASF

Circle No. 102 on Reader Inquiry Card

PRODUCT REVIEW

Job applicant screening covers 5 major areas

Wells Fargo Investigative Services offers the landscape/golf industries its Five Star Pre-Employment Screening Program.

The Wells Fargo screening program—the same one used to screen its thousands of guard applicants each year—includes the following five elements:

county criminal record check;
state driver's license record check;
consumer credit report;
Social Security search;
previous employment verification.

The company gives a 72-hour turnaround on applicants screened. It also offers custom-designed reports to meet your specific requirements.

Circle No. 192 on Reader Inquiry Card

WANTED

for impersonating an expensive fertilizer

Natural organic **Terrene**, with its slow release, non-burning properties is showing up on turf professionals' "most wanted" lists everywhere.

The specialized Turf and Greens grades of new **Terrene** can be custom tailored to fit into any fertilizer program. Whether you're in lawn and turf care, golf course or landscape maintenance, nurseries, or any other related business, you'll profit from **Terrene**'s growth potential.

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Terrene™

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Lancaster, PA
17601-0036

Circle No. 107 on Reader Inquiry Card

All-purpose fungicide in easy-to-use packets

Duosan WSB (Water Soluble Bags) is an all-purpose turf and ornamental fungicide from Grace-Sierra Horticultural Products Company.

Duosan WSB gives turf managers ver-

satile, broad spectrum disease control in a safe, easy-to-use pre-measured form.

Group marketing manager, Mark Broxon, says Duosan eliminates the need to purchase, store, re-load and use multiple fungicides at one time.

Duosan WSB is labeled for use on turf, ornamentals, trees, shrubs and flowers and provides broad spectrum control of most turf and ornamental diseases. It contains a contact and a systemic fungicide.

Circle No. 193 on Reader Inquiry Card

New biological ready for turf, ornamentals

Sandoz Crop Protection Corporation has introduced Steward, a new biological insecticide for use on turf and ornamental plants. National distribution began in the fall of 1991.

Based on a strain of *Bacillus thuringien-*

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1. BUSINESS & INDUSTRY

My primary business at this location is: (Check only one in either A, B, or C)

A. LANDSCAPE/GROUND CARE AT ONE OF THE FOLLOWING TYPES OF FACILITIES:

0005 ☐ Golf courses
0010 ☐ Sports complexes
0015 ☐ Parks
0020 ☐ Rights-of-way maintenance for highways, railroads & utilities
0025 ☐ Schools, colleges & universities
0030 ☐ Industrial & office parks/plants
0045 ☐ Condominiums/apartments/housing developments/hotels/resorts
0050 ☐ Cemeteries/memorial gardens
0060 ☐ Military installations & prisons
0065 ☐ Airports
0070 ☐ Multiple government municipal facilities
☐ Other type of facility (specify)
_____
_____

B. CONTRACTORS/SERVICE COMPANIES/CONSULTANTS:

0105 ☐ Landscape contractors (Installation & maintenance)
0110 ☐ Lawn care service companies
0112 ☐ Custom chemical applicators
0125 ☐ Landscape architects
0135 ☐ Extension agents/consultants for horticulture
☐ Other contractor or service (specify) _____
_____

C. SUPPLIERS

0205 ☐ Sod growers
0210 ☐ Dealers, distributors
☐ Other supplier (specify) _____
_____
_____

2. WHICH OF THE FOLLOWING BEST DESCRIBES YOUR TITLE? (Check only one)

10 ☐ EXECUTIVE/ADMINISTRATOR—President, owner, partner, director, general manager, chairman of the board, purchasing agent, director of physical plant
20 ☐ MANAGER/SUPERINTENDENT—Landscape/ground manager, superintendent, foreman, supervisor
30 ☐ GOVERNMENT OFFICIAL—Government commissioner, agent, other government official
40 ☐ SPECIALIST—Arborist, forester, architect, consultant, agronomist, pilot, instructor, researcher, horticulturalist, certified specialist
50 ☐ OTHER TITLED AND NON–TITLED PERSONNEL (specify) _____

sis (B.t.), Steward is active against certain lepidopterous species, including armyworms, cutworms, loopers and sod webworms. It also controls bagworms, budworms, gypsy moths, leafrollers and tent caterpillars, according to the company.

Ron Fister, director of turf and ornamental sales, says Steward is safe to predator insects. There is no pre-harvest interval or re-entry restriction for workers, and residual activity is seven to 10 days.

Circle No. 194 on Reader Inquiry Card

Shuttle car perfect for resorts, touring

Columbia ParCar's Shuttle is a comfortable way to move people and equipment efficiently and safely.

The Shuttle features a 2-cycle Columbia engine, which does not require an oil change. The electric model comes

with a lift-out battery pack tray for continuous use and an on-board automatic electric charger.

State of the art features like Columbia's speed balanced rack-and-pinion steering give the Shuttle superior maneuverability and steering capabilities. The front body is constructed of metton, a synthetic space-age plastic, to assure users of a durable, long lasting front body and many versatile uses.

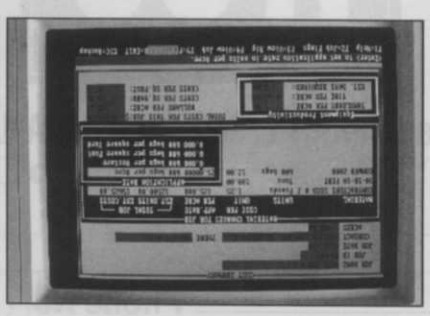
A trunk is optional.

Circle No. 195 on Reader Inquiry Card

Hydroseeding software calculates all job costs

Erosion Control Technologies has introduced an IBM-compatible software package designed for hydroseeding projects.

The Hydro Seed Cost Estimator item-



izes and calculates materials, labor and equipment costs for each estimate. As the user selects each element of each cost category, costs are sub-totaled and converted into: dollars per acre, center per square yard and cents per square foot.

Any miscellaneous costs may also be added or removed from the estimate at any time.

Variables include: job size, cycle time, travel time and pump-out time.

Package includes materials management, equipment maintenance, work order reports, user manual and on-line "help facility."

Circle No. 196 on Reader Inquiry Card

Tractor available with diesel, gasoline engines

Walker introduces the new Model D tractor with a water-cooled, three-cylinder Kubota engine, available in either 16.5-hp or 21-hp gasoline versions.

Designed for heavy commercial service,

this model features compact dimensions and a powerful, long life, industrial engine.

Walker offers other compact and maneuverable mid-size rider mowers for commercial operators and owners of large homes.

Circle No. 197 on Reader Inquiry Card

Software keeps records in compliance with regs

Environmental Compliance Systems, Inc. has created an innovative software program that keeps chemical inventory records and transforms them into governmental compliance reports.

The "Superintendent's Compliance/-Management System" can be used by superintendents or other chemical users for chemical inventory, application reporting, Hazardous Communication programs and employee safety and training records.

Pop-up lists and easy key functions allow new computer users to quickly become proficient with this powerful software. Full financial report generation, modem capabilities, tree inventory, and scheduling are included.

Options include architectural drawings on your computer. Print function available if adaptable to user's printer.

Circle No. 198 on Reader Inquiry Card

New greensmower warns rider of oil leaks

The Toro Company announces the roll-out of the Greenmaster 3100, engineered with the "Turf Guardian" leak detector

Toro reports that the hydraulic oil leak detector can warn of leaks as small as five ounces, to prevent major damage to the appearance and playability of the green. The Greenmaster 3100 is called the lightest mower in its class, designed to minimize turf compaction.

The 3100 provides a single-lever, quick-adjust steering arm designed to accommodate different-sized riders and steering styles. All instrumentation is conveniently grouped on one side. The mower is powered by a 16-hp Vanguard engine.

Circle No. 199 on Reader Inquiry Card

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RATES: $1.25 per word (minimum charge, $40). Bold face words or words in all capital letters charged at $1.50 per word. Boxed or display ads: $105 per column inch-1x (one inch minimum); $100-3x; $95-6x; $90-9x; $85-12x. (Frequencies based on a calendar year). Agency commissions will be given only when camera-ready art is provided by agency. For ads using blind box number, add $20 to total cost of ad per issue. Send ad copy with payment to Dawn Nilsen, LANDSCAPE MANAGEMENT, 1 East First Street, Duluth, MN 55802 or call 218-723-9483. Fax Number 218-723-9437.

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FOR SALE - Lawn care company located in Michigan's upper peninsula. Reputable company with solid customer base, both residential and commercial. Equipment includes: Chevy C-60 with 1000 gallon stainless tank, Ford F-350 with 600 gallon stainless tank, Dodge 250 with 325 gallon poly tank, plus aerator, dethatchers, etc. All equipment in excellent condition. For information, please call (906)474-9221. 1/92

NOW... LEARN PROFESSIONAL LANDSCAPING AND GARDENING AT HOME! Accredited program provides thorough training in all phases of commercial and residential landscaping. Diploma awarded. Free booklet describes program and opportunities in detail. Lifetime Career Schools, Dept. A-578, 101 Harrison St., Archbald, PA 18403. 9/92

WANT A HIGH INCOME SECURE FUTURE? Here's your opportunity! Buy a well-established maintenance company in Baltimore, Maryland with $25K down. Owner drew $59K in 1990 on sales of $127K. (410)987-7141. 1/92

HELP WANTED

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TURF SPECIALIST: Experience in the application of lawncare materials desired. Commercial applicators license and good communication skills a plus. Competitive hourly wage/full benefit program. For more information call 215-368-9333 or send resume to: P.O. Box 249, Kulpsville, PA 19446. 1/92

Need a general manager or trouble shooter for chemical lawn care? Need growth or increased profits? Need a cleaner, more productive company or if you want to ad a chemical lawncare division or start a new company call John at (208)338-5107. 1/92

SALES/MANAGER LANDSCAPE MAINTENANCE: Looking for aggressive person with extensive background in sales for commercial grounds maintenance and landscape clientele. Experience should include client prospecting, contract negotiations, estimating, annual budgeting and a general working knowledge of all aspects of the grounds management industry. If you are seeking a career opportunity with an aggressive full-service firm, please send your resume to LM Box 490. TF

TURF MANAGEMENT SUPERVISOR: Responsible for production/quality control at our Southeastern PA location. Experience in diagnosis and application of lawncare products required. Must possess commercial applicators license and ability to provide quality customer service. Supervisory experience a plus. Full benefit package. Salary commensurate with experience. Please send resume to: P.O. Box 249, Kulpsville, PA 19446. 1/92

LAWN CARE BRANCH MANAGER: Well established major company expanding in midwest and eastern cities desires ambitious, hands-on branch manager. Must have successful telemarketing experience in lawn care and be able to motivate both telemarketing and production employees. We care about our employees and offer high salaries and good benefits. Please reply to LM Box 474. 3/92

BRANCH MANAGER: For large southeast regional landscape maintenance contractor. Must have 3 years experience running a $1,000,000 + branch. Must possess good operational and customer service abilities. Excellent salary and benefits. Send resume to LM Box 488. 2/92

LANDSCAPE MAINTENANCE SUPERVISOR: For multi-million dollar Florida landscape company. To handle field supervision for up to 5 crews. Knowledge of southern horticulture preferred. Salary + benefits. Send resume to: Mr. S. Khalsa, 1174 Florida Central Parkway, Longwood, FL 32750. 2/92

GROUNDS MAINTENANCE/LANDSCAPE/LAWN CARE- Expanding grounds management firm in Cincinnati and Columbus seeks qualified and experienced personnel to fill openings in Grounds Maintenance, Landscape Construction, Lawn Care, Irrigation and Flower Care. Quality conscious individuals knowledgeable in ornamentals, turfgrass, landscape installation, lawn mowing, irrigation service, pest management and flower care should respond. Outstanding compensation, year round work, benefits and advancement opportunities available. Letter or resume to **PRO-LAWN PROSCAPE,** 11488 Deerfield Road, Cincinnati, Ohio 45242; Attn: Clayton Sheeler. (513)489-2433, days. 2/92

LANDSCAPE MAINTENANCE FOREMAN: needed on prune and spray crew. Experience necessary. Requires previous Foremanship. Plant and Insect I.D., Pesticide Applicators License within 60 days. Snow's Inc., 1875 Avon St., Extended, Charlottsville, VA 22902. 804-295-2159. 1/92

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PIPE LOCATOR INEXPENSIVE! Locates, traces underground drain, water pipe lines of clay, PVC, ABS, steel, cement. Finds sprinklers, valves, clogs. Bloch Company, Box 18058, Cleveland, Ohio 44118. (216)371-0979. TF

NEW TURF INSTALLER: One man turf installing machine. The TIM750 installs large rolls 2.5 feet wide and 100 feet long. Less seams, drying and labor with good soil contact and excellent customer satisfaction. Harvest and install turf faster, easier and with better quality. Call Jim Sterling (419-257-2119) Cygnet Turf, 4111 Insley Road, North Baltimore, Ohio 45872. (Video available). 1/92

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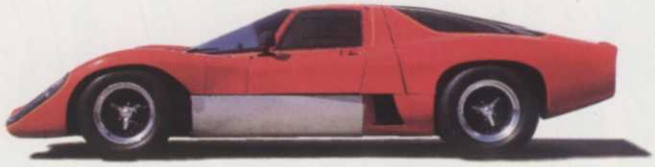

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